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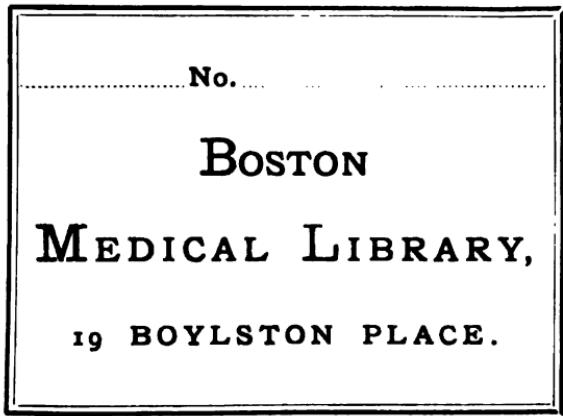
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*Liverpool
medico-chirurgical journal*



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THE
LIVERPOOL
MEDICO-CHIRURGICAL
JOURNAL,
INCLUDING THE
PROCEEDINGS OF THE LIVERPOOL
MEDICAL INSTITUTION.

VOL. XVIII.

1898.



LIVERPOOL:
MEDICAL INSTITUTION, HOPE STREET.
LONDON: H. K. LEWIS, 186 GOWER STREET.



PRINTED BY NEILL AND COMPANY LTD., EDINBURGH.



THE
LIVERPOOL
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JOURNAL,
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PROCEEDINGS OF THE LIVERPOOL
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No. 34.

JANUARY 1898.

Price 3/6.



LIVERPOOL:
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PRINTED BY NEILL AND COMPANY, EDINBURGH.

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MEDICO-CHIRURGICAL JOURNAL.

Original Articles.

PRACTICAL GYNÆCOLOGY. By WILLIAM ALEXANDER
M.D., M.Ch., F.R.C.S., Surgeon to the Royal Southern and
Workhouse Hospitals, Liverpool.

(Continued from vol. xvii. p. 329.)

CHAPTER III.—THE TREATMENT OF UTERINE DISPLACEMENTS.

THE treatment of uterine displacements is *preventive* and *curative*, and the latter may be divided into (a) *general treatment*, (b) *rectification by mechanical contrivances*, and (c) *operative treatment*. Under these heads we will describe, 1st, anterior displacements; 2nd, posterior displacements; and 3rd, prolapse.

The preventive treatment of anterior displacements does not generally belong to the gynaecologist, but to the mother, to the teacher, to society, and to the correction of inheritance where the disease is inherited. More frequently, however, anterior displacement is a developmental defect, and arises from over pressure at school or college, where the womanly element is dwarfed at the expense of the intellectual. Hence the education of the growing girl must not be pushed beyond a healthy extent, but be intermingled with feminine pursuits and recreations, tending to develop the entire system as well as the brain.

If a woman intend to lead a celibate life, then she may sacrifice her sex to her intellect, and become learned without any apparent injury to her health. Should marriage take place, however, the small anteflexed and undeveloped womb will be a

source of discomfort, and she will regret the sacrifice when too late. Girls do well at the universities because they pursue their studies so closely, not having athletic distractions like boys; but these are not the girls most likely to make healthy wives and mothers. They do not always blossom into full womanhood, and too often pass their lives as clever, hysterical invalids. While the development of the rest of the body must not be sacrificed to the brain, the non-development of the entire economy is a much worse fault, and a much more common one. An intellectual woman we can admire, and the sacrifice of the physique to the intellect is a laudable work from many points of view. But when physique and development are sacrificed to fashion, and nothing results from the sacrifice but a miserable bundle of aches and pains, and nerves and childish wants, medical men cannot speak loudly enough, both as to the condition and the remedy. Young girls who cannot take their food, who cannot walk, who cannot do anything but read light literature, should *do* nothing else but learn to eat and walk, and should not be allowed to do anything else until they can do this. Girl school-life should be more free and hearty and active, with less regard to punctilio at table, primness of demeanour and speech, and more to natural unconscious modesty, alike of conduct, speech, and manner. When a girl's health begins to fail, when she becomes anaemic, chlorotic, loses appetite, and complains of shortness of breath, sickness, etc., she should be sent away to the country, where she should run wild, take long rambles, climb mountains, feel cold and hunger and thirst, be ravenous for food, and not too difficult to please as to the kind of food. A girl who cannot take her food and romp about is not fit to go to parties, balls, concerts, and similar forms of dissipation, where her mind is on the strain, and not always with the strain pleasant and health-giving; her body lightly clad, exposed for long periods to tiresome postures, and from which she arrives home exhausted, excited, or disappointed, to partake of a late supper, and consequently to go to bed at a late hour. A strong man would not undertake what many delicate girls have to endure in this way. If more common-sense were applied to the

duration and time of day of these dissipations, it would be better for everybody, except for the medical profession and the gynaecologists.

It is impossible here to do more than utter this warning against fashionable follies and against fashionable life as a cause of anteflexion, but individual medical men can do a great deal in individual cases in making their warnings have a practical effect. We will now proceed to consider other preventive measures more likely to be carried out.

The schoolgirl and the adolescent woman at present are taking more and more to healthy exercise ; the bicycle and lawn-tennis, golf, with some other similar outdoor health-bestowing pastimes, are becoming fashionable, and with their use in moderation and regularity nearly all medical men quite agree. But frequently a girl or woman, hitherto of idle habits and undeveloped muscles, takes to one of these vigorous pursuits, and is carried away with delight and pleasure. The result is a breakdown, and during the breakdown the signs of uterine displacements occur. The preventive treatment obviously is a gradual training in any new pursuit ; and just in this, as in several other more important things in our life, there is less trouble taken than in smaller matters. Latin, French, Italian, and German are taught by skilled teachers, and each is practically useless in the future to 90 per cent. of the pupils, but physical exercises are learned by chance, or assisted by a casual and often inexperienced friend. A slip in pronunciation is far more guarded against than a slip of an important internal organ, though the grave importance of the latter slip cannot be compared with the slight importance of the former. We take far more care of the physical training of our horses and dogs than of our girls ; and it is only when the mischief is done that we employ skilled advice and spend money lavishly when the difficulty of doing real good is very great or it may be impossible. An ounce of prevention is here, as elsewhere, worth more than a pound of cure.

We would recommend skilled advice, both technical and professional, as to the physical exercises all pupils indulge in, and as to the physical training best suited for each child, accord-

ing to its age and sex. At present a weak, undeveloped girl is too often initiated by a strong, vigorous schoolfellow, and the spirit of emulation tends to lead the former beyond her strength, to her perhaps lifelong invalidism.

We do not think any good can accrue, but great harm may result from warning girls that they must not run, jump, ride on horseback, cycle, golf, play lawn-tennis, swim, etc., because of the 'internal injuries' that may follow. Displacements do probably occur in girls from every one of these exercises, but they only occur through the overstrain of the lax, undeveloped fibres of novitiates, and do not tend to occur, but the very reverse, in experts in the games or exercises. It is not a healthy frame of mind for any individual, especially a highly-strung girl, to have to think, before she does anything, how it may affect her interior, or to stop after any exertion and feel, or as it were to listen, if any harm has been done.

At the periods, however, and for a day or two before and after, no girl should be allowed to engage in any severe exertion. The uterine organs are then congested and heavy, more liable to be displaced and to remain displaced; and, in my experience, the troubles of backward displacement very often date from a strain or accident at a menstrual period.

Just as exercises, *i.e.*, intermittent strains and relaxation, strengthen and increase the volume of muscle, so constant strain without relaxation weakens and stretches muscular tissue. Hence, continuous standing, especially if leaning forward, or continuous sedentary occupation, are both bad. It is the weariness that does the mischief. The muscles become limp, and the attitude assumed favours displacement. When a woman stands erect and firm, or sits in an active, alert attitude, in neither case is she in much danger of causing the class of troubles we are now writing about.

The displacements we have to treat in practice are all chronic ones,—that is, displacements that have lasted over a considerable period of time.

The jump, the fall, the strain, the twist, the miscarriage, the parturition, or whatever else the predisposing cause may assumedly

have been, occurred always "many months" ago: no one ever sees the cases at the time, and then and there examines the pelvic organs.

To young girls we cannot at present do this for many obvious reasons, and rest, blisters, and large quantities of medicines are prescribed till the pain disappears, or the trouble is said to warrant or necessitate an examination.

Wherever there is reason to suspect traumatic displacement, this expectant course of treatment should no longer be continued. *Under an anaesthetic*, the true state of affairs should be accurately ascertained, and can be accurately ascertained without shocking the patient, and the womb replaced. I have no doubt that a very small and unirritating pessary applied at such an early stage would result in a permanent cure without any other treatment. If the uterine organs are found not to be displaced after such an examination, then we can eliminate them from the data upon which our diagnosis is founded, and the mental relief afforded to the patient by knowing that she is right internally will always materially hasten her recovery, and counterbalance the inconveniences of the examination.

Again, when pregnancy temporarily corrects a displacement, a pessary inserted three weeks after parturition or after miscarriage, before the womb has had time to recur to its previously displaced condition, may so influence involution that in time the natural and not the displaced condition may remain. In several such cases I have obtained a cure by preventing a recurrence of displacement; and it is a plan I would impress on obstetricians whose opportunities of work on this line are much greater than mine.

Abdominal surgeons are becoming more and more familiar with the effect of obstructions of the bowels or obstinate constipation in producing effusion of sero-lymph into the abdominal cavity, and in producing various congestions in the large abdominal and pelvic plexuses of veins. He sees both changes when he opens the abdomen in his various surgical operations, and the effect of aperients as relieving both conditions are now well known. These effusions and congestions should be prevented, as we know they lead to immobility of the abdominal organs,

and in many cases a judicious use of aperients will have to be resorted to, in addition to exercise and a regulated diet. The aperients should be simple and varied, and should be administered in such doses as will bring about a natural motion. Strong purgatives inconvenience the patient, are necessarily followed by constipation, as too much of the contents of the intestinal canal are discharged, and the excess must of necessity be discharged prematurely, and this premature egesta means diminished nourishment of the body. Cascara, rhubarb, aloes, and liquorice, and mild vegetable aperients generally, are better than salines, and may be so given as to be productive of nothing but good.

But with all our preventive treatment, and all our warnings as to the causes of uterine displacement, only a small number of cases will be prevented. Many displacements take place insidiously, and are unsuspected until they have become established. Slight and even severe pains in the pelvis, produced by violence, will always be concealed, in the hope that time will bring them right, until failure of health is apparent, or the patient musters courage to inform her friends or her doctor of her secret trouble. We then find a confirmed displacement of old standing, and surrounded by symptoms and complications that require treatment.

In such a case a prescription containing an aperient, such as cascara, with nux vomica, hydrastis canadensis, a quiet life, or perhaps rest at home, or on the sofa, will relieve the urgent symptoms, and make the patient fairly comfortable. The displaced organ ceases to feel displaced, congestions take place less and less at the menstrual periods, and the patient goes about practically cured, though perhaps sterile. The displacement remains the same, but she is no longer cognisant of it.

How the patients behave under these circumstances depends largely on their own natural disposition, and to a less degree on the kind of medical attendant they have. With one set of circumstances a displacement dominates the patient's life. She does everything in subordination to her disease, she will not sit with her feet down, she dare not stand for fear of falling to pieces; and her precautions and notions are absurd, childish, and

purely imaginative. She requires constant attention, and her usefulness as regards her husband and family and society are largely at an end. Such a patient has somehow obtained an exaggerated idea of the serious import of her complaint, and her symptoms are due to her conception of it rather than to the disease itself. Another patient looks upon the displacement as an infirmity that will give her trouble if she walk or stand too much, if she allow the bowels to become constipated, or if she fail to take reasonable care at the menstrual periods. With a few precautions she gets along very well, and only sees her medical attendant occasionally; uses a douche at certain intervals, or a little aperient medicine. A third class of women with displaced wombs take very little care, except they have an attack of what they call inflammation. Then they have to lie up in bed, are attended by their doctors until they get better, when they go about as well as they can till another attack lays them low. They take no precautions, do not realise the cause of the attacks, or are not enlightened on the subject until the attacks of so-called inflammation becoming very frequent, they seek other advice.

Of these three classes, the first is often an example of *nimia diligentia medicorum*, engrafted on a nervous temperament; the third, the opposite extreme, of *minima diligentia medicorum*, engrafted on a lymphatic or altruistic temperament; and in the second class we find a sensible patient, and a sensible and scientific adviser, where both realise the nature of the infirmity and the methods of being as comfortable as possible under its existence.

A large number of patients are successfully treated for displacements in no other way, and get along fairly well. Hence when a patient presents herself to us with a displacement that has only been discovered, or that has not been treated, it is well to remember that neither instrumental nor operative treatment may be necessary, and that simple attention to hygienic and dietetic rules, with simple medicines, may suffice. The true nature of the complaint should be carefully explained to the patient, so that she may be neither nervous nor careless about

herself. We can then ascertain how far the infirmity can be made tolerable by simple means, and whether there be any need to proceed to further measures.

Pessaries.—These simple measures apply to all mild kinds of displacement; but when other measures are necessary, we will have to treat the different displacements separately, as anterior displacements, posterior displacements, and prolapse.

For anterior displacements, I have long ceased to use any kind of supports. In past years I have used all kinds of pessaries. I believe they are all much more productive of evil than of good, are either intolerable or useless. I treat such cases either by the simple medicinal treatment, or by the operative treatment to be presently described.

Backward displacements, both retroversion and the milder forms of retroflexion, can be successfully treated by an easy-fitting but well-fitting Hodge's pessary, provided there be no tenderness, no prolapsed or painful ovaries, and that the uterus can be easily reduced. When the parts are congested owing to the displacement, reduction and insertion of a pessary, with rest and douching of warm water for a few days, relieve all the symptoms. When, however, there is inflammatory thickening, a pessary does harm, and its insertion should be postponed until the inflammatory symptoms have been subdued. With cleanliness, such a pessary may be worn for a long time without any inconvenience. When any irritation arises during its use, it should be removed, a few days' rest enjoined, with daily antiseptic douchings, and at the end of that time a new instrument inserted. Sometimes a patient who has tolerated such an instrument for many years becomes so sensitive and irritable that she cannot bear it any longer; a soft air or fluid ring may then be borne, or it is often better to allow a prolonged rest without any mechanical support. A patient may remain very comfortable without a mechanical support who previously could not do without one, although the exact cause of the change is not manifest, the uterus still remaining as before.

The pessaries that I prefer are those made of celluloid, capable of so much softening by hot water that they can be easily

manipulated to fit each particular patient. The Hodge and the fluid rings are the only pessaries I ever employ, both for backward and downward displacements; and when these fail, I recommend operative treatment.

Before entering upon the different kinds of operative treatment, I would call attention to the necessity of treating subinvolution, endocervicitis, erosions and other diseased conditions of the cervix, endometritis, and split cervix. These conditions sometimes entail small operations such as curetting, Emmet's operation, intra-uterine douchings, swabbing out with iodised phenol or similar substances. Many of these can be performed simultaneously with the operation for displacement; and when possible, it is better to perform them all at one sitting, rather than trouble the patient with several separate operations. Of course, intra-uterine and vaginal medications, treatment of diseased cervix by antiseptics, etc., should be performed previously to operation; and curetting is more safely performed alone, as of all the operations for displacement, except perhaps ventro- and vagino-fixation, it is probably the most serious.

Operations for Anteversion and Anteflexion that resist the simple medicinal and local treatment previously described.

The only operation that I perform for forward displacement is dilatation by Hegar's dilators made in silver. I use a scale of sizes numbered from 13 to 36, and arranged, I believe, by Dr Burton. The extent of dilatation depends on the size of the womb, and means dilating as far as I think the cervix will stretch without tearing. The dilators are passed slowly, with a slight interval between each, while the feeling of stretching is experienced, and until the uterus and its canal become quite straight. The operation is performed in the following way:—The dilators, retractors, and vulsellum forceps are boiled before use and arranged on a tray, where they are immersed in carbolic lotion until used. The vagina is well douched with perchloride or carbolic lotion; the patient lies in the lithotomy position, and is usually under an anæsthetic. The cervix uteri is pulled down by

a vulsellum, and the labia are held asunder by means of retractors held by nurses or assistants. The operator holds the vulsellum in the left hand, the right hand receives the oiled dilators in order from the nurse and passes them into the uterus, the direction of the canal having been ascertained by the uterine sound. When the canal is sufficiently dilated, the uterine cavity is washed out, by means of Bozeman's or other intra-uterine douche, with an antiseptic, and the interior may be explored by the curette or 'touched up' with iodised phenol. In using the latter, great care must be taken to protect the skin from being stained by the caustic, as it produces severe pain for some time when applied to the external surface. Its application to the cervix or to the uterine canal is almost entirely free from pain. After this operation the patient must be kept in bed for a week, looked after for a fortnight, and douched out daily during the first week, and occasionally during the second week.

If any febrile symptoms appear, it is well to wash out the uterus; but if the operation be performed with due attention to antiseptics, and the patient take due rest and care afterwards, no febrile symptoms should be experienced. I do not like to perform the operation, small though it seems, without a nurse to look after private patients. In hospitals the operation is quite safe, but at home the patient feels so well that if alone they do all sorts of things, and a very troublesome cellulitis may arise.

The benefits of this operation in forward displacements are sometimes all that can be desired. It relieves irritable bladder, cures sterility, lessens dysmenorrhœa, and sometimes, by its moral as well as its physical effect, frees the patient from more strictly neurotic phenomena. In other cases the operation has no effect whatever on the symptoms; and I always warn either my patient, or at anyrate her relations, that while the operation is simple and safe, it is not a certain cure for all the symptoms associated with anteflexion, and that sterility may depend on a great many causes, of which anteflexion is only one. Still, the success of the operation is so great in effecting relief or cure, that I have no hesitation in recommending it, with the provisos before mentioned.

In a few instances, many years ago, I divided the posterior lip and dilated with a glass stem, but I have given this up, because it certainly possesses no advantages over dilatation, and has the serious disadvantage of weakening the lower zone of the uterus. In some cases I have ascribed abortion to this weakening, the os beginning to dilate at a certain time, and the uterus emptying itself, in spite of all precautions. In fact, I have stitched several up that had been incised some years before without any advantage, and after the stitching up the patients generally expressed relief.

Dilating by sponge tents I have entirely given up for many years; forceps dilatation has shared the same fate; and the single or double bladed hysterotomes are shown to the students as museum curiosities, having been tried in the past and found wanting.

Ventro-fixation may be useful in some obstinate cases, and so might some other more severe and serious operations, but I have never found it necessary to perform any of these for this infirmity. The question, Is your life so miserable that you would seriously risk it to be relieved of your symptoms? has never been so affirmatively answered as to cause me to advise any of these major operations for simple forward displacements.

When I come to treat backward displacements by operation, I feel more at home; and here again I only perform one operation, and that is shortening the round ligaments. As in the forward displacements, an operation here is only thought of after all other means have failed, or when there are special reasons for resorting to an operation, such as sterility; rebellion, either physical or mental, to the use of pessaries; mental worry, through the knowledge that there is something wrong, and the hopelessness of ever being independent of treatment except by operation. Working-people require the operation more than the well-to-do, as they cannot afford the time and rest necessary to keep themselves comfortable. The simplicity and safety of the operation cause some to have an operation instead of other treatment, where its performance is not an absolute necessity.

History of the Operation.—During the years 1879, 1880, and

1881, my attention was attracted by the large number of cases of displacements of the uterus under my care in the gynaecological wards of the Liverpool Workhouse Hospital. Prolapsus uteri was most common, but there were also many cases of retroflexion and of retroversion, and a few cases of anteflexion and anteversion. All these patients had been under treatment for years. Pessaries were useless in the most of them, owing either to the exaggerated form of the displacement, or to the irritation of the mind or body produced by their presence. When relief seemed to be obtained by the use of a pessary, the relief was almost certain to be of short duration, and it would mostly happen that the patient returned to hospital in a few days with the pessary in her pocket or nowhere to be found. The uterine complaint was a grand excuse to secure exemption from work and admission to hospital.

I felt that the *desideratum* in such cases was an operation that would fix the womb in position, so that it could not be voluntarily disarranged by the patient, and that at the same time would allow all the natural functions of the body to be carried on without the necessity for *any* exercise of self-denial on the part of the patient.

Before I thought of this new method I performed the only operation hitherto described for prolapse of the uterus, in which the vaginal canal is contracted and the perineum fortified by means of plastic procedures, the modifications of which are as numerous as the operators themselves.

Although these operations do good in a certain number of cases, their success depends on the absence of all dilating causes. The external dilating causes *can* be abstained from but generally *are not*, whilst the internal causes are always at work. Hence in the very worst cases, where operation is most necessary, the result is the least satisfactory. I have performed several operations by these methods, and only in one case was I quite successful, after the lapse of three months. In that case I had to modify the operative methods of preceding operators in a radical and useful way; but as, since that time, I have devised

a better method, applicable to all cases, I will not refer to the case further.

I also thought of stitching the uterus to different parts of the pelvis, but experimental operations on the dead subject showed me that serious objections to all such proceedings existed.

About 1879 I thought of the round ligaments as a means of replacing the uterus, but my impression of their possible utility was so small that I never took the trouble to examine them until June or July 1881. Up to that time I believed them to be faint bands that merely served as landmarks in developmental physiology; attenuated ghosts of tissue, out of which certain structures were developed in the male.

In June or July 1881 I obtained the body of an old woman for post-mortem examination, and in her I was astonished to find how thick and strong the ligaments were.

For some months after that I examined all the round ligaments I possibly could, and on 14th December 1881 I successfully operated on a case of prolapsus uteri by pulling up and shortening these ligaments.

Four cases were published in the *Medical Times and Gazette* in April 1882, and since then many reports of operations have been published, both in the Old and in the New World, by myself as well as by other operators, and the opinions upon the operations of nearly all the leading gynaecologists everywhere have been expressed in the medical press. These opinions and results will occupy the next chapter. We will here only refer to some points in the history of the operations that were necessarily omitted in the previous edition of this book.

At the time of my original operation, and for many months afterwards, nothing was known of any record of a similar operation having been conceived or practised before.

In June 1882 (*Glasgow Medical Journal*) Dr James A. Adams of Glasgow describes very fully how, from an anatomical point of view, he was led to the same operation. His investigations on the dead body must have been going on at the same time as mine, but he was two months later before he was able to operate, and then he could not complete the operation on

account of adhesions. Soon afterwards reports of previous investigations came from the Continent, and at the present time the following summary of the researches upon the subject places the facts fairly and briefly before the reader.

In 1840 Professor Alquie of Montpelier presented a thesis, "Sur une nouvelle méthode pour traité les divers displacements de la matrice," before the Academy of Medicine. This thesis did not meet with any encouragement, and remained in the archives of the Academy until it was unearthed and published by Dr Camelle Moreau, a copy of whose pamphlet on the subject reached me recently through the kindness of Dr Nicholson. A perusal of it shows that M. Alquie had elaborated the operation to a very complete extent. He never performed it on the living, and the only record of his thesis in contemporary literature was one by Tillaux in his treatise on topographical anatomy, where, according to Dr Manrique, the following passage occurs:—

"M. Alquie, thinking that the round ligaments were the cause of the resistance that often is experienced in pulling down the uterus, conceived the singular idea of shortening them to prevent prolapsus uteri."

"On the other hand, Aran, attributing to these same ligaments the part, not of supporting the uterus, but of drawing the fundus forward, thought of applying the operation of Alquie to the cure of retroflexion. I do not know whether experience may ever confirm these purely theoretical ideas."

The operation was here very near its birth at the full period, but the fully formed foetus dropped, stillborn, for what precise reason we cannot tell (whether from want of a suitable case, lack of surgical enthusiasm, or of both, no one knows), and not an echo of the occurrence was felt in the medical literature of the English language in 1881.

Twenty-four years later, in June 1864, M. Deneffe of Gand tried to shorten the round ligaments on a case of Professor Bourggraeve's. He not only failed to shorten the ligaments, but the local inflammatory disturbances at the seat of operation were so great as to imperil the life of the patient. Fortunately, no record of this attempt to perform the operation found its way

into English literature until after my cases were published, else the operation might still have existed only in my mind. Deneffe's attempt would have certainly deterred me from proceeding further. Whilst, therefore, such an operation was thought of, planned, and attempted before 1881 by continental surgeons, nothing came of these ideas and attempts. In that year the idea required to be originated afresh for the third time, and for the first time it was carried to a successful issue.

Method of Performing the Operation of Shortening the Round Ligaments for Backward Displacement.

Any medical man who has sufficient leisure to read the various papers published by the writer on this operation, will find that its details are continually changing. It would serve no useful purpose to notice here these changes in detail. We shall therefore describe minutely, and we hope clearly, the details of the operation as we perform it at the present time.

The patient is prepared for operation in the ordinary way, the pubes shaved and rendered clean by antiseptic washings and dressings, and the vaginal canal well douched out. When the patient is under the anaesthetic, the pessaries are inserted—a small easy-fitting Hodge in retroversion, and a stem and Hodge in retroflexion. In the first class of cases the Hodge is inserted to push upwards and backwards the attachment of the uterus to floor of the pelvis. The retro-uterine ligaments are relaxed, and relaxation means gradual shortening of these ligaments. This gradual shortening of the posterior and upper attachments of the uterus combined with the shortening of the round ligaments in front and below, render the position of the uterus very stable after operation. If the round ligaments only are shortened, and the cervix and lower parts of the fundus are allowed to swing downwards during the healing of the wounds, and to approximate to the vaginal outlet, very little consideration will be necessary to show that the ligaments are dragged upon during the healing process by the weight of the uterus, that imperfect union of the ligament may take place, and that at any-

rate the recovered tone of the sacro-uterine bands will not result. Many failures are no doubt due to this cause; and I do not think the operation has been properly performed unless a pessary has been used.

In all aggravated cases of retroflexion a stem pessary is necessary in addition to a Hodge, not only during the process of healing of the wounds, but for three weeks after operation.

In the normal uterus the round ligaments are attached close to the origin of the Fallopian tube, and on a level with the limits of the fundus uteri. Consequently, when the ligaments

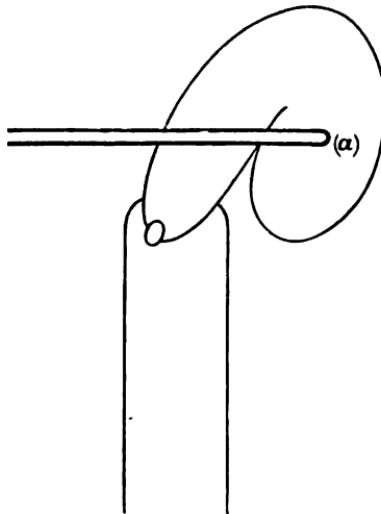


FIG. 1.—Diagram showing a chronic retroflexion of the uterus and the position of the round ligaments.

pull upon the uterus the whole fundus is raised vertically. In cases of prolonged retroflexion the relative position of the different parts of the uterus is altered through the abnormal development of the fundus that occasionally takes place. The diagrams here shown illustrate what I mean.

In fig. 1 the retroflexed and retroverted position of the uterus is shown, and the attachment of the round ligaments at *a*, a considerable distance from the fundus. In operating on the first case of this kind, the sound was inserted and handed to an assistant, and the ligaments pulled upon. Soon after, on examining the

uterus with the finger, I found the condition of affairs as indicated in fig. 2. The sound had slipped, and the fundus had recoiled like a watch-spring. This recoil the round ligaments, from their abnormal position, were unable to prevent. A galvanic stem pessary straightened the uterus completely, as in fig. 3, and the round ligaments were then able to maintain the uterus in position. After operation the fundus gradually shrinks and becomes normal.

In the first case time was lost, because the condition was not

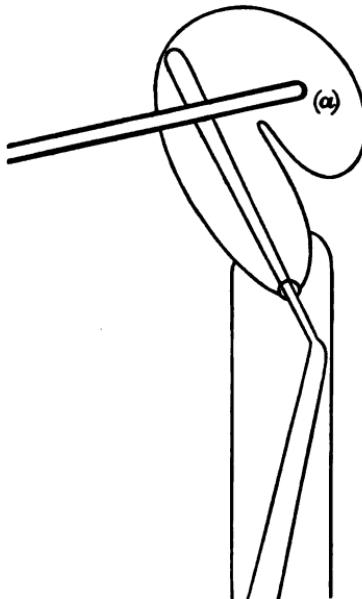


FIG. 2.—Diagram showing the effect of pulling on the ligaments alone without previously straightening the uterus completely by the sound.

appreciated for two days, and then the round ligaments were dragged upon in replacing the uterus and in applying the pessary. The adhesion of the ligaments was disturbed, so that the operation was partially a failure. In all my retroflexion cases the 'galvanic' pessary and the Hodge are introduced at the time of the operation, and before making the incisions.

I use the so-called galvanic stems on account of their shape and size. The galvanic action is not a contra-indication, and the type being in existence already and well known, I have

simply used what was to my hand, and to be obtained from any instrument-maker. Any other stem pessary of the same shape and size, but made of any other suitable material, will do just as well. Many objections have been taken by gynaecologists to the presence of the stem pessary. I have not found any serious objection after many years of their use in this operation. When they are removed, they are generally encrusted with salts, and the os and uterine canal are well dilated, but no evidence of metritis, parametritis, or perimetritis has been observed. It

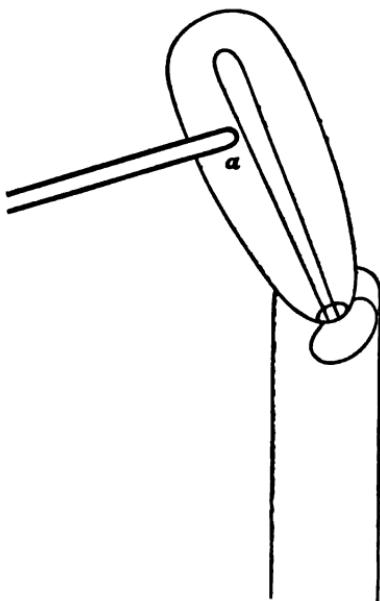


FIG. 3.—Diagram showing uterus straightened by a stem pessary.

must be remembered that the patients remain at rest in bed during the entire period of its use, and under the charge of a nurse: under less strict conditions of rest and care, a stem pessary is no doubt a dangerous instrument.

In both cases, after insertion of the 'Hodge,' or of the 'Hodge' and stem, the uterus should lie nearly in its natural position. If not, there is probably some adhesion that may contra-indicate the operation at present, and it should not be proceeded with.

The position of the uterus being satisfactory, the surgeon standing on the opposite side of the patient to that on which he is operating, places his finger on the pubic spine and makes an incision an inch long, more or less, according to the probable depth of the wound, in the line of Poupart's ligament, and terminating at his finger. The wound is to be deepened by successive incisions (the edges of the wound being separated as we proceed by small retractors), until the tendon of the external oblique muscle is reached. This glistening tendon is unmistakable in appearance, and should be the goal of the first stage of the operation. I have known operators stop at the deep layer of the superficial fascia, in doubt whether it was not the external oblique fascia. My rule is that when in doubt, proceed : when the true goal is reached there is never any doubt.

The skin and fascia can now be moved easily about, so that the opening of the wound can be displaced hither and thither, and the external inguinal canal looked for. It is a mistake for an operator to go down into this canal direct, as he may go too deep and wound the ligament or its accompanying vessels. It is best, no matter how expert he may be, to find the external oblique aponeurosis first, and the ring second. The ring varies in size, but it is most frequently distinct to sight as well as to feeling, and the end of the ligament, with its nerve and vessels, are quite perceptible, as they turn obliquely over the lower pillar. A few arciform fibres have to be incised, when the contents of the canal spring out and the ligament can be readily seized. It should be seized carefully with *dissecting* forceps, lifted up and pulled gently upward to show its form and colour. Round and pinkish at first, it becomes white in colour as the tension increases.

The accompanying nerve is to be incised, and all other structures separated with a probe, and then the ligament should be caught between the finger and thumb.

The retractors being still kept in position, the point of emergence of the ligament is well under observation, and the operator both sees and feels what progress he is making, and how the end of the ligament is bearing the strain.

No instrument that I know of can equal the human hand for delicacy of grasp and appreciation of strain, and few structures in the human body are so easily crushed as the beginnings of the round ligaments. When the ligament has been pulled out three or four inches it stops running, and the finger feels that there is a firm resistance. Holding the ligament in my left hand, I pass a single *silkworm gut* suture through the skin of one side of the wound, through the pillar of the ring of the same side, then through the centre of the ligament at its point of emergence, and the pillar of the ring and skin on the opposite side of the wound to that where the needle entered. This suture is tied firmly, the retractors being for the first time taken away to allow it to be done. Any small vessels that have been clamped during the course of the operation are now tied, the frayed end of the ligament is cut off, the stump ligatured if necessary. The stump just peeps out of the inner end of the wound, which is closed sometimes, if the wound be large, by a catgut suture.

The operator and his assistants now change places, and the opposite side of the body is operated on in the same way.

A little iodoform is dusted over the wounds, some green protective applied, double cyanide gauze superimposed, and all covered over with plenty of salicylic wool. By a flannelette bandage round the body, and as a double spica, the dressing is firmly bandaged in position, and the patient is left for a week with the dressings untouched, unless a rise of temperature should require the wounds to be looked after. At the end of the second week the *silkworm gut* sutures are removed. At the end of three weeks the stem pessary is removed, and the patient allowed to leave her bed. The Hodge is left in for six weeks longer, and sometimes longer still, but this often depends on the mental attitude of the patient, as she is afraid to have it removed lest the womb should fall back. The longer the pessary is retained without any inconvenience, the better is the result likely to be. It is best not to remove it for nine weeks after the operation, but it may be retained for as long after that as circumstances require. It will be seen that I have given up the buried sutures, both

silkworm gut and catgut, that I formerly used. The first often left a sinus that would not heal till the offending suture was removed, and the second has been suspected of occasionally melting away too soon.

By the present method we have the advantage of silkworm gut without its disadvantages.

Operation for Prolapsus Uteri.—The operation of shortening the round ligaments is directly, as Aran suggested, beneficial in correcting backward displacements. Indirectly it is, however, the first part of the operative treatment for prolapse. Before dressing the round ligament wounds, the patient is placed in the lithotomy position and the perinæum is repaired if it be torn or narrow, and if the patient be still of the child-bearing age. Should the patient not be liable to child-bearing, either through age or condition, then I advance the perinæum, just leaving room for the passage of a little finger below the pubic arch. No Hodge or stem pessary is used when the perinæum is fortified or extended, and all the operations necessary are done simultaneously.

I have not required any other operations for such cases as come under my observation; ventro-fixation, vagino-fixation, and other plastic operations on the vagina and uterus, have not yet been done by me; and valuable though they may be, not having come under the practical experience of the writer, are consequently outside the scope of this work, which is only a survey of my own experience.

THE OPERATIVE TREATMENT OF APPENDICITIS.¹

By RUSHTON PARKER, *Professor of Surgery in University College, Liverpool.*

CASES of intestinal obstruction, having origin in so-called typhlitis, so completely overshadow all local considerations as to require special treatment for the intestinal symptoms alone, and belong to a category not included in this notice. Other cases of typhlitis, or perityphlitis, attended chiefly by constipation, are relieved by aperients of an ordinary domestic kind, and may or may not be attended with the local symptoms associated with inflammation of the veriform appendix.

Quite apart, then, from attacks of intestinal obstruction, of varying severity, or even of constipation alone, these cases of appendicitis have come to be recognised by pain and tenderness in the situation of this now important though once insignificant organ.

Relapsing typhlitis, or recurrent appendicitis, is agreed to be, with general propriety and frequent success, submitted to surgical treatment, which is not seldom both applicable and successful in a first attack.

The best and simplest explanation of the pathology of this affection is, to my mind, that which attributes it to an accumulation of intestinal bacteria within the appendix, retained there by a plug of faeces or other concretion, and setting up inflammation by the products of an irritating culture. The result is a localised peritonitis, of varying intensity and extent, according to the pathogenic property of the organisms. There may be suppuration or sloughing, or both; or there may be inflammation without either suppuration or sloughing. When once the habit of operating, or seeking operation, has been acquired, new

¹ Read before the Lancashire and Cheshire Branch at Warrington, December 9, 1897.

light is thrown upon the cases, and fresh interest attached to them.

It is not my object in this communication to defend operative treatment, which had become widespread before ever I undertook it, nor is it to relate to you the particulars of every case so dealt with by me, but rather to draw attention to some of the variable technical methods necessitated by differing incidents, and arising out of some of my experiences. The cases of operation are seven in number, six of them having been true appendicitis, and one perforative typhlitis following typhoid. The simplest course and result occurred in the following two:—

CASE II., a man aged 38, had repeated attacks of constipation and flatulence, with pain and tenderness over the cæcum. A few doses of castor-oil put him all right for a few weeks, when he returned in a similar condition. The same treatment was followed by relief of all but the local pain and tenderness. The abdomen was opened on 1st June 1896, by an incision above Poupart's ligament. The veriform appendix was tied near its base, the serous covering being allowed to project beyond the mucous membrane, which latter was thus shut off from the peritoneum. The abdomen was closed, and healed in a week. Slight fever and pain occurred for three days, but there was no local complication, and the patient was soundly well in a month.

CASE VII., a young woman of 19, had an abscess in the right groin, which burst, and was further opened and treated anti-septically in my ward in 1894, eventually healing. Since that time the scar has reopened several times, with a small discharge of pus, followed by healing. These attacks have been not merely local suppuration, but also abdominal pain and tenderness over the cæcum. I have regarded them as attacks of appendicitis, partly relieved by issue of inflammatory products along a sinus or fistula resulting from earlier attacks. Acting on this supposition, I operated on 1st December 1897, and found the veriform appendix firmly attached by its middle to the peritoneum of the iliac fossa near Poupart's ligament, and continuous with a

dimpled scar in the groin, which had just healed again after a recent spontaneous opening.

The appendix was removed at its base and the abdomen closed.

The muscles and peritoneum were sewn closely with one set of stitches, and the integuments with another, partly because of a thick layer of subcutaneous fat, and partly because previous cases have a hernia at the scar. Complete union has occurred, and the patient is (9th December) apparently well.

The following two cases supplicated:—

CASE I., a man aged 28, was operated on after five attacks in seven months, on 20th January 1896. Suppuration occurred in three days, and it was three months before he healed.

CASE IV., a woman aged 36, after six recent attacks, and many before them, was operated on on 11th November 1896, the appendix being removed as in the other cases. There was a pasty exudation on the cæcum, which I should not have trusted; but I closed the abdomen. Suppuration occurred in a few days, followed by a faecal fistula which lasted for months. She did not resume her occupation of stewardess for eight months after operation.

CASE V., a boy aged 14, had a first attack on 29th March 1897, and was admitted into hospital four days later. The symptoms were pain, tenderness, and a small induration over the cæcum, with constipation, flatulence, and slight fever.

Administration of castor-oil in small frequent doses opened the bowels daily for a week, and relieved all the symptoms except slight tenderness and a portion of the fulness.

Operation was undertaken on 21st April, some three weeks after the attack began. The appendix was removed and found dilated in two places, in the proximal one of which lodged a concretion, while the distal one was perforated and surrounded by a lymphy exudation. As this was probably not aseptic, the wound was packed down to the stump of the appendix with cyanide gauze dipped in hot water.

He healed in five weeks, and was discharged in good health.

On 2nd December he came to the Liverpool Medical Institu-

tion, showing a hernia at the scar that gives him no inconvenience. He probably went to work too soon after operation.

There now remain two cases of faecal fistula.

CASE III., a man aged 31, was attended in a medical ward for an attack of typhlitis in October 1894, followed after six months by abscess and sinus in the right groin. In June 1896 I laid open the sinus and scraped it out, without benefit, and, in fact, a faecal fistula formed. On 31st August 1896 I once more enlarged the sinus by incision below Poupart's ligament, and opened the abdomen by another incision parallel to the former and above Poupart's ligament. The finger was then found to enter the cæcum when passed up the sinus, which latter was packed with sponge dipped in strong antiseptic fluid. The cæcum, previously adherent to the iliac fossa, was detached from there, a thickened vermiform appendix cut off, and the hole in the bowel closed. The bowel was then re-attached to the iliac fossa by a series of sutures and the abdomen closed.

The septic sinus was treated by gauze packing. The abdominal wound healed in a week, and the sinus in three weeks. He was seen in good health in April 1897, but there was a hernial protrusion, of no inconvenience to him, at the upper end of the scar.

CASE VI., very similar to the last, was that of a man aged 29, having a faecal fistula of the cæcum, following an abscess which was opened about 1st November 1897. This occurred during convalescence from typhoid, which commenced 14th August 1897.

Operation somewhat as in the previous case was performed on 27th November 1897; only, in addition to the faecal fistula of the cæcum, there was a very foetid abscess in the iliac fossa outside the peritoneum, communicating with the cæcum and with the sinus.

Here the vermiform appendix was not affected; and the history being that of typhoid, the perforation was apparently due to ulcerative typhlitis alone, at some little distance from the appendix. The latter was removed to prevent future disease, and the hole in the cæcum was closed, after raising it from the iliac fossa. Here one gauze packing was inserted into the peritoneal wound

and iliac fossa, and another into the septic sinus. The patient, unlike all the others, was greatly emaciated at the time of operation, but has been perfectly comfortable ever since, and quickly regained his appetite, which had been lost.

Suppuration was not here arrested altogether, though greatly diminished, nor did the faecal fistula remain closed. But after a few days the faeces ceased to issue for five days, and then only a slight stain appeared. There seems every prospect of an early spontaneous closure. His health and appetite are both excellent, and the emaciation is disappearing.

To save time, I have given such cases as briefly as I could, while I hope I have not thereby impaired their intelligibility.

From having been shy to operate in such cases, I have come to advocate that procedure in most cases,—in every case that either desires it or consents to it, and certainly whenever any doubt exists.

A final word on the subject of cyanide gauze packing, which I regard as one of our greatest safeguards against haemorrhage and septic processes, applicable to almost every kind of operation when needed.

A NOTE ON THE TREATMENT OF PHTHISIS IN THE
ORANGE FREE STATE. By CHAS. HOLCROFT BLOOD,
M.A., M.D.

PHTHISIS, as we know, is a special morbid condition of nutrition, associated with a continuous increase of the temperature of the body, which gradually wastes, and a disposition to and a growth of tubercles in various parts, more especially the lungs and mesenteric glands.

Medicine seems inert in this morbid condition, the ravages of which extend from one part of the globe to the other, and no climate is said to be absolutely free from its visitation ; so we naturally welcome any treatment tending to improve the state of the consumptive, and none has offered more hope, or held out a more likely chance of prolonged life, or effecting a complete cure, than the "high altitude treatment."

We all remember the despair with which many cases of this disease were looked on not so very long ago, and what really little hope of recovery was held out to them. Many of these have recovered ; others are doing well.

From an early period in the history of medicine we learn that change of climate and change of air have been considered remedial agents of great efficiency ; and acting on these principles, patients were sent on sea voyages—trips to Australia, Madeira, and so on—and were no doubt benefited thereby, but very few permanently. But, owing mainly to the labours and investigations of British physicians, a brighter outlook is now in store for many who can avail themselves of a residence in a high altitude.

The true treatment of phthisis, once begun, is to assist nature in limiting the progress of the disease. Tuberclle cannot live without moisture : a moist air nourishes its growth ; a dry air tends to destroy it. The breathing of pure aseptic air, not by fits and starts, but constantly, is what we have to desire.

We have to bear in mind that we are dealing with raw ulcerated surfaces in the respiratory passages, which are very susceptible to all impurities of the atmosphere, and especially the microbic element which abounds, and goes on unseen, and often unheeded, wherever organic decomposition takes place, and wherever there are human beings closely congregated. Whether this be from infection or not is an open question. As the disease is well known to flourish in the thickly-populated districts, therefore "hygienic surroundings" are of the greatest importance. Hence, it is clear that a pure, unbreathed, aseptic state of the air is the first demand which we ought to make on the climate to which we send patients.

Another point: How far do climates and health-resorts assist the invalid in improving the general nutrition and power of resistance? This depends to a great degree on their enabling the invalid to be much in the open air, and take active exercise without the risk of chills.

It is well known that domesticated animals are more liable to tuberculosis than the same animals in a wild state. Also persons living a sedentary life, like cooks and indoor servants, who are often insufficiently clothed, get a chill which starts the disease. This is constantly remarked as a cause of the disease appearing among the native races in South Africa; also the depression of spirits (among a people who are naturally gay and light-hearted) resulting from discipline and study in native schools and religious colleges, where there is often a deficiency of ventilation.

Cases fitted for Treatment.—Perhaps I had better first indicate those cases that are not fitted:—Those whose constitution succumbs rapidly, and offers no resistance to the invading organisms; where fever is high, and who are unable to exert themselves. Many of these cases have not long to live, and should not be sent away from home comforts.

On the other hand, we find constitutions which strongly resist the invasion of the infective organisms, where the disease is chronic in every way, the body-weight and energy well preserved, but who are constantly catching colds, and whose dull

spot is, if anything, gradually increasing in extent. These are the cases not to be dallied with, else the golden opportunity may be lost. Is he to linger on at home, going from bad to worse, or to go where he can get better—work and do well? He may perhaps wish to try some European health-resort (which, I regret, is only too often recommended), where he can dance, skate, or toboggan; and look forward to the summer, when he drives down the hill in search of some other social excitement. But though he may find his health improved, still he is only temporising, and returns to his native country only to fall back again. He is only adopting the treatment by fits and starts, not constantly.

We will suppose, then, that a prolonged residence, say for six or eight years at least, in a high altitude is necessary, and that he goes to that portion of the territory lying north of the Orange River, and between it and the Vaal River, known as the Orange Free State Republic, between 27° and 30° south lat., and 25° and 29° east long., where I have resided myself for the last ten years. It is an elevated plateau, from 4300 to 5500 feet above sea-level; not picturesque; for most part consisting of long rolling plains of land, or 'veldt,' as it is called, dotted here and there with hills, and, except in a few localities, almost devoid of trees; very sparsely populated, and possessing a delicious climate—characterised by a pure, dry, aseptic atmosphere; a dry (mostly sandy) subsoil; no fog or mist; low barometric pressure, and a corresponding rarefaction of the air; a low temperature,—in short, the usual features of those localities which enjoy an immunity from phthisis.

Summer Months (November to February).—We find that during the six hottest months the average maximum temperature is 80° Fahrenheit, average minimum 52° Fahrenheit, and humidity registered 55° average.

Winter Months (May to August).—Average maximum temperature 63°, minimum temperature 34°, and is often as low as 8° below freezing-point.

The heat of the summer is not therefore considerable, and is perfectly tolerable, with its dry atmosphere and cool nights, the

heat of the day not being prolonged into the night, so it is not trying to the invalid. And in winter what actually happens is that there are cold, dry, frosty nights, followed by comparatively warm, bright, cloudless days, from three to four months together, without mist or fogs.

After a comfortable and most enjoyable sea voyage of sixteen or seventeen days to Cape Town, or to Durban, Natal, four days further on, one can now travel by rail to Bloemfontein, the capital of the Orange Free State, where the population is as much British as Dutch, and where he can find excellent hotel and lodging-house accommodation, sports and amusements of all kinds, and all the social advantages of a civilised community.

But as a health-seeker he should be cautioned to avoid, if possible, the necessity of at first earning a livelihood, but rather to get as much benefit from the climate as possible. After a few months a residence on a farm is important, as by not doing much work, and keeping out of doors on horseback, etc. the greater part of the day, he may obtain a knowledge of South African farming, which would be useful if he ever desired to settle in the country; or he might hire a waggon and oxen, in which he can comfortably live, and travel about the country in search of sport, developing an appetite to consume, and a skill to supply, a larder full of varieties. He is at once drawn away from the contemplation of his delicate state of health, and from conditions under which his disease originated. He may wander further north into the Transvaal (which is also a superb climate), and visit Johannesburg, the largest gold-producing centre in the world, where he may find ample scope to speculate on the Stock Exchange; or if he be a mechanic—a mason or carpenter—his skill will be readily sought after, and suitably rewarded.

I may here state that my remarks are not meant solely for the benefit of the male sex; the gentler sex may derive similar blessings from the climate. Domestic servants can readily find healthy employment. Governesses and trained nurses are eagerly sought after. You may ask how poor mechanics and impecunious women are to reach this Elysium? The question is a big one, and not in my power to answer. But I think we may look

forward to the time when some millionaires, like Mr Cecil Rhodes, and many like him, who have emigrated there in search of health, and who to-day owe their very existence to this salubrious climate, will see fit to answer a question fraught with such great importance.

To sum up, then, the points most sought after in phthisis, and found in the Orange Free State Republic, are:—High altitude; purity and aseptic state of the air; dryness of atmosphere and subsoil; coolness of the air temperature, with a large proportion of sunshine; low barometric pressure and rarefaction of the atmosphere, with an absence of overcrowding.

DIPHTHERIA.¹ By CHARLES J. RENSHAW, M.D., F.F.P.S.
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DIPHTHERIA is defined as "a specific contagious disease, with or without membranous exudation, on a mucous surface, generally of the mouth, fauces, or air-passages, or occasionally on a wound of the skin."—*Aikin.*

The word 'contagious' I have inserted; later on, its correctness will be proved. Out of thirty cases noted during an epidemic, the incubation varied from fifty hours in the most severe case to fourteen days in the slightest, and the rule was, that the longer the disease was in showing itself, after the probable time of infection, the less serious was the attack of diphtheria. The cases are ushered in by a shiver, slight in mild cases, severe in the more dangerous ones; then a rise in temperature and in pulsation; in a few hours a sore throat appeared; and still later, or about thirty hours from the shiver, membrane exuded, first generally upon the tonsil and uvula, then the back of the pharynx, over the roof of the mouth, and upon the mucous membrane lining the cheeks, or downwards, lining the larynx, and on to the trachea. The prostration in bad cases was severe, the pulse varying from 140 to 160, and the temperature from 102° to 106°, and in one case 108°. Albumen was detected on the second day from the exudation of membrane, a great distinction between this disease and scarlet fever, in which it rarely is found till the stage of convalescence or exfoliation has set in.

In nearly all the cases there was enlargement of the glands at the angle of the jaw, and the lymphatics in connection therewith, which showed early or late according to the severity or reverse of the case. Occasionally, too, there was a discharge from the

¹ Read at the Medical Congress, Moscow, August 1897.

nose, which caused much trouble and was very offensive; there was always great prostration with it.

If the cases terminated in recovery, many days had to be passed over before the patient was free from the danger of paralysis. The paralysis seemed generally to attack the muscles of deglutition first, then the eyes, then passing downwards slowly, till in several cases every muscle had in turn been paralysed. Recovery from the paralysis always took place. The number of cases attacked by the paralysis after diphtheria was twenty-five per cent.

Mrs M., 33 years of age, well made and healthy, mother of seven children, suckling the youngest, commenced to shiver on 1st November at bedtime; on 3rd November she complained of stiffness of the lower jaw and sore throat. The pulse 130, temperature 102°, tonsils swollen, deglutition difficult, breathing 28 to the minute; eight hours later, the diphtheritic exudation showed itself on each tonsil, and twenty-four hours later, or on the beginning of the fourth day from the shiver, ninety-six hours from the probable time of contagion, the whole of the back part of the mouth was covered with diphtheritic membrane; the pulse was 160, temperature 106°. The membrane increased so much in thickness that there was danger of suffocation simply by mechanical means, and the effluvium was most offensive. Under treatment, the patient recovered after a severe struggle of four weeks. The albumen showed itself the second day after the appearance of the diphtheritic membrane, and, although much diminished, is still there, three years after the attack. At the end of six weeks paralysis supervened, which first attacked the eyes, causing internal strabismus, then the nerves of hearing, then of smell, then of deglutition, chest, arms, and legs. The treatment of this was the internal administration of strychnine and the external use of electricity by the constant current. The recovery was perfect, except for the albuminuria.

L. M., female, 23 years of age, fairly healthy, had a severe rigor on 24th June, at night; on 27th June the membrane showed itself on the fauces and rapidly spread, covering the

mouth, passing down the trachea and oesophagus, as shown by the difficulty of breathing and swallowing. On 30th June there was double pneumonia, the abdomen was tympanitic, other mucous membranes were found to be covered with diphtheritic membrane. The following day she died. The membrane could not be removed, not being able to get the mouth sufficiently open.

In the endeavour to prove that diphtheria was contagious from man to animals, and so probably from animals to man, I made, some years ago, several experiments with diphtherite on animals. Some membrane of a greyish-white colour I had removed from a patient was given to several cats; one portion was given to two cats; the smaller of the two began to be ill on 6th June, the third day, and died on the seventh day. On examining the animal after death, patches of diphtheritic membrane on the mouth, fauces, and lining of the bronchial tubes, also on parts of the bowels, were found. The small amount of urine collected from the bladder was highly albuminous; the kidney was of whitish colour. The second cat lived to the thirteenth day, having begun to be ill on the fourth, and suffered from a very severe attack of the disease, the post-mortem showing the diphtherite lining the whole mucous tract, partly in patches, from the mouth to the anus; the urine was albuminous, the kidney similar to what one meets with after death from scarlatinal dropsy.

One experiment was the introduction of some of the membrane into the axilla of a cat by means of a wound: the animal at once began to be ill, and in three days there was membrane on the fauces and on the back of the throat. The attack of the disease was slight, recovery soon taking place.

Nine experiments were the administration of diphtherite from the same patient as the previous case, having been previously placed in a saturated solution of permanganate of potass; these produced no effect upon the animals, neither did six pieces of the membrane similarly placed in the wounds of cats; diphtheritic membrane placed in a saturated solution of hypochlorous acid gave a negative result on being inserted into a wound of a

dog, as did also several experiments on mice with the same material, also with the perchloride of mercury.

These cases point decidedly to the conclusion that diphtheria is eminently contagious, and also to the possible antidote in the early application of a strong solution of permanganate of potass or hypochlorous acid, or other antiseptic.

Some experiments with the membrane of membranous croup, by administration to animals, were made, but there was not any effect thereby, clearly showing the difference between the two diseases.

Is diphtheria a sewer disease? If not, how does it arise? In the deduction drawn from the papers of the Collective Investigation Society upon that disease, it appears that less than one-tenth of the number of cases is supposed to arise from sewers or bad drainage. At first it was thought the disease was met with chiefly in new houses and new drainage areas, but it is equally to be found in old as in new houses, well drained and otherwise, in houses in which there is no connection with drains, and in localities where there are no drains at all. It is therefore evidently not a sewer disease *per se*, although it is no doubt possible for it to be carried by drains, and undoubtedly badly ventilated drains, emitting noxious gases into the house of the patient, make it a much more dangerous disease to treat. The disease is epidemic and sporadic, and, as far as can be made out, does not follow any particular line of drainage. The bacillus is, I think, often air-borne.

There is no doubt it is contagious from person to person. One sister called to see another who was not well, suffering from a sore throat. She kissed her. This lady began to shiver three days afterwards, which was the commencement of a severe attack of diphtheria, although the sister who was kissed did not show the diphtheritic membrane till the day after she was kissed. The visitor who kissed the poorly one only remained in the house a few minutes, so that probably the kiss was the cause of the contagion.

Another case, where one child with a slightly sore throat bit another upon the lip. The child bitten suffered from diph-

theria, which commenced in the wound and then in the throat, the disease beginning on the seventh day after being bitten, the child that bit the other only developing diphtherite two days after the operation. This again shows distinctly the contagiousness of the disease, and that it may be communicated before the appearance of the diphtherite. During an epidemic in this neighbourhood some of the drains were very faulty from sinking of the solid portion of the drainage through badly laying of the pipes, but the sewers were well ventilated. The cause of the epidemic is not evident, unless the partly blocked drains were the cause of the spread of the bacillus; and what seems a matter to be noted was this, that during the height of the epidemic there was a peculiar sickly smell at the time of the morning when, as a rule, the atmosphere is most fresh and pleasant, that is from 1 to 5 A.M., that I did not perceive after the epidemic had subsided. Another was, that a quantity of stinking night-soil from Manchester, constantly being delivered, loaded the atmosphere with odours diabolical. The disease is found where there is decaying vegetation and animal decomposition together. In the great epidemic of France (1818-1855) and Scotland, it is on record that the places were in an insanitary state, all sorts of material, mixed and unmixed, animal and vegetable, being left about to decay and taint the air. This, of course, probably is only the medium: if the bacillus of diphtheria has spores, which seems probable, but not certain, it being of a vegetable nature, they or the cause of diphtheria may fructify in it.

CASE 1.—A heap of vegetable matter on 1st October was mixed with a quantity of animal matter by two men; both heaps had been on the ground for some months. Neither of the men was taken ill. This mixed heap was distributed over a field on 1st March. One of the men who distributed it, and a boy who assisted him, were taken ill of diphtheria, one on 3rd March, the other on the 7th.

CASE 2.—A similar heap, similarly treated, was spread on a field adjoining a house in which there were children. The two men who carted the material on to the field, as also

the five children, were all ill of the disease within fourteen days.

CASE 3.—A heap of ordure, close to a house, having been there a considerable time, was mixed with some vegetable debris: no one was ill then; but three months afterwards, it being opened and used to the garden, four children residing in the house were seized with diphtheria.

CASE 4.—Two children were playing on a heap of animal and vegetable manure just opened; four days afterwards the first child was taken ill with diphtheria, and two days later the second child fell ill with the same malady.

CASE 5.—Some strong mixture of blood and vegetable matter was spread on a rose bed; a little child watched the process, was sick at night, four days afterwards was suffering from diphtheria; there was no other case in the neighbourhood, and the child had not been out of its own garden.

We do not seem to have much diphtheria in those immense slaughtering-places in Europe or South America, where, if anywhere, we might expect to have that disease if it arose simply from decaying animal matter; nor yet from the heaps of decaying vegetation left in the neighbourhoods of our markets, such as Covent Garden, if vegetation in its resolution were the cause of the disease.

Now, is this only an accident? Are these various decompositions only waiting the favourable moment to become hotbeds for the propagation of diphtheria of themselves; or do not rather the cases I have quoted point at the probable necessity of the nidus, or rearing-bed, being the poisons of animal and vegetable decomposition together?

It is a well-known fact that scarlet fever and diphtheria may affect the patient at the same time; but, as far as the bacteriology of the subject is known, and the means of the spread of the disease is observed, the tendency is to consider them distinct diseases.

It is not, as you are aware, an uncommon occurrence for a patient suffering either from scarlet fever or from diphtheria to be seized with epistaxis. Upon injecting the liquor sanguinis

from both cases into animals, that from scarlet fever injected into the areolar tissue of a rabbit caused slight illness on the second day, sore throat on the fourth, and whitish tongue on the fifth, sixth, and seventh, with recovery on the tenth. The liquor sanguinis from a case of diphtheria caused death in a rabbit similarly treated seventeen hours afterwards from congestion of the lungs, and in a frog awakened from its hibernation in twenty-four hours.

It would seem, from experiments, that diphtheria is different from membranous croup; that it is different from scarlet fever; that it is a disease of itself, of a highly dangerous character, but that science has great power over it as to prevention and treatment. There is no doubt it is conveyed by contagion.

During last year a boy at school had a sore throat, but no membrane was found, nor enlargement of the gland near the angle of the jaw, and there was no albumen in the urine. He drank at a tap of water, and five other boys drank at the same tap. Each of these boys suffered within fifteen days of diphtheria of the pharynx, and the Klebs Loeffler bacillus was found in each case: this is proof of contagion. Three children were taken ill on 20th November, all developed diphtheria: the only cause that could be found was a cesspool which had no exit, the ventilation being only down the soil-pipe from the closet next door to the nursery; the exit had been sealed up by a neighbour into whose land the house drained. It is therefore highly probable that the bacillus may exist in some very mild cases of affection of the throat, and only give rise to their serious consequences on more favourable soils.—*Osler.*

EXPERIMENTS *ante*, ACT 39 & 40 VICT.

June 1st.	Administered membrane of diphtheria to one cat.	
„ 3rd.	To two mice.	Aug. 21st. To a cat.
„ 5th.	To a rat.	Sep. 3rd. To three mice.
July 2nd.	To a cat.	„ 3rd. To one hen.
„ 2nd.	To a cat.	„ 7th. To one hen.
Aug. 7th.	To a cat.	„ 18th. To one hen.
	Paralysis 15th day.	Paralysis 23rd day.

Result—negative as far as membrane could be detected. There was no doubt as to the membrane being that of diphtheria.

This membrane was of a yellowish-white appearance. All the cases from which the membrane was taken had enlargement of the lymphatic glands at the angle of the jaw, and three of the cases suffered afterwards from paralysis. Five cases had albuminuria, commencing on the second, third, fifth, and ninth and tenth days respectively.

June 6th.—Having seen that the stomach and bowels of a cat were emptied, some diphtherite membrane, of a whitish-grey colour, taken from the throat of a living patient, was applied to the throat. The cat died on the ninth day of diphtheria.

June 6th.—Administered diphtherite to a cat. Result—death from diphtheria on seventh day.

June 6th.—Third cat. Result—death from diphtheria in twelve days.

Diphtherite membrane was removed from the fauces of a patient.

June 8th.—To a cat, death occurring on ninth day.

June 9th.—To two mice. Death occurred on tenth and thirteenth days.

The first and second experiments were made by swabbing out the throat of the patient suffering from diphtheria, and then rubbing the swab freely over the healthy throat of the cat. Others were made on wounded throats, and the mice ate some cheese which had been infected.

June 10, 11, 12, 13, 14, and 15.—Some membrane taken from the same case was saturated in a solution of permanganate of potass, which gave negative results on the administration to animals in nine cases. I also got negative results from saturating the diphtheritic membrane in hypochlorous acid, and using it for a like purpose.

June 12th.—Placed some membrane in a wound of a cat and got well-marked diphtheria in three days. The animal recovered. All experiments to inoculate animals with the membrane of membranous croup were failures.

Fourteen experiments on animals with the yellowish-white

membrane were all failures. The six experiments on similar animals made with greyish-white membrane were successful. If diphtheria can be conveyed from man to animal, why should not diphtheria be conveyed from animals to man?

It appears to be held by some that diphtheria may be divided into three kinds: that in which the Klebs Loeffler bacillus is found,—that is, the long variety of the bacteria diphtheria; that in which the short variety, that of Hoffman's bacillus, is found; and the membrane in which neither of these is discovered, but the other symptoms of the disease are the same: there also is occasional paralysis with all forms. The length of time that the bacillus may remain in individual throats has been computed by the Clinical Research Society of London to be seventy-four days, and probably this bacillus would be virulent if it came in contact with suitable medium to propagate. The culture of the Klebs Loeffler in sterilised inspissated ox serum is by no means difficult. There is considerable difficulty, however, sometimes, owing to the mixture with other organism, such as streptococci and micrococci, to separate the bacillus of diphtheria.

The use of the antitoxine undoubtedly changes the bacteriological examination, and it also changes the treatment, as there is no doubt that it has a decided influence in many cases when it is used.

RESULT OF ANTITOXINE TREATMENT.

As to the results of the treatment, it has been found that in the hospitals of the Metropolitan Asylums Board the percentage mortality, as a whole, has fallen from 29·6 (the lowest previously reported) to 20·8. Of the cases that came under treatment on the first day, the death-rate has fallen to the remarkable figure of 4·7 per cent., as compared with 22·5 per cent. in 1894. For the five years 1890–1894 the mortality amongst the post-scarlatinal cases was slightly over 50 per cent., while, now that most of these cases are treated by antitoxine, the mortality has fallen to 5 per cent., although the mortality amongst the cases treated on the fourth or fifth day and later is over 40 per cent.

Amongst those treated on the first day it is 2·8 per cent. Taking those treated with antitoxine only, the mortality is 5·7 on the total, and 2·3 on the first day ; indeed, out of 250 cases treated at once, only 6 died.

Intubation is of use, but I think only mechanically, as the disease often spreads in spite of it.

The most dangerous forms are those that attack the larynx and the nasal membrane, and the most difficult to treat are those that attack children under two years of age.

ANEURISM OF THE THORACIC AORTA.¹ By JAMES
BARR, M.D., *Physician to the Royal Infirmary, and Lecturer
on Clinical Medicine, University College, Liverpool.*

GENTLEMEN,—I wish to-day to bring under your notice two interesting cases of aneurism of the thoracic aorta, from which I hope to deduce some practical lessons. Of all the arteries of the body, the aorta is the one most liable to aneurism; but even in this vessel there are certain points of selection which are no doubt largely determined by physical causes. I may here premise that I use the term 'aneurism' according to the definition of Walsh, as "a local increase in the calibre of a vessel." After detailing these two cases, I shall then deal with the whole subject as it affects the thoracic portion of the aorta.

S. J., aged 55, formerly a draper's salesman, latterly a caretaker. This man was admitted to the Royal Infirmary on March 31, 1897, and, with the exception of the month of July, he has been since in continuous residence here, so that you have had many opportunities of examining him. The history and condition of the patient, with which I hope the majority of you are acquainted, may be briefly stated as follows:—

He acknowledges to having had a chancre twenty-two years ago, and with that exception, he says, he enjoyed good health until about two years ago. He has been chiefly a beer drinker, in which he indulged rather freely. Since October 1896 he has suffered from cough, difficulty of breathing, and loss of voice.

When admitted he was suffering from bronchitis and well-marked signs of aneurism of the transverse portion of the arch of the aorta. There was marked dulness over this portion of the aorta, with strong expansile pulsation in the second and third left intercostal spaces: here there were also accentuated second sound and diastolic shock, appreciable both to the hand and head when applied to the stethoscope. The first sound was

¹ A clinical lecture delivered at the Royal Infirmary, November 30, 1897.

prolonged at the apex, but there were no cardiac or aneurismal murmurs. The left vocal cord was paralysed. The pulse was absent in the right radial, and the arteries generally were atheromatous. There was marked tracheal tugging. There was no difference in the pupils, nor any other evidence of pressure on the sympathetic. His bronchitis disappeared, but otherwise there was not much alteration in his condition until June, when an event occurred to which I have alluded in the following note which I recently dictated.

Nov. 29, 1897.—On the whole, his general condition seems to be rather better since June, when an aortic diastolic murmur was noticed. With the exception of this murmur, there has not been much alteration in the physical signs, but there has certainly been no enlargement or any evidence of increase in the aneurismal swelling.

The transverse cardiac dulness extends $1\frac{1}{2}$ inches to the right and 4 inches to the left of the mesial line. The apex-beat is situated in the fifth interspace in the nipple line, and is neither very strong nor prolonged. There is a marked heaving impulse in the epigastrium, which is not affected by inspiration; the heart is not well overlapped by lung. Continuous with the upper part of the cardiac dulness there is a broad, somewhat quadrilateral dull area over this portion of the arch of the aorta, which extends 2 inches to the right and 3 inches to the left of the mesial line. A general heaving impulse can be felt over this area, but this is most marked in the 2nd and 3rd left intercostal spaces. In these spaces there is also felt a slight diastolic shock. There is no murmur over the dull area, but the second sound is accentuated; and at the lower part of the sternum the second sound is followed by a prolonged diastolic murmur. Over the rest of the cardiac area the first sound is very dull and the second not distinctly heard. The arteries generally are atheromatous, and there is an arcus senilis on each cornea. The pulse is only perceptible in right radial, but in the left it is quick, short, and collapsing. There is little or no difference in the two carotid pulses: strong pulsation in suprasternal notch.

The tracheal tugging is still well marked. There is marked

laryngeal stridor, associated with paralysis of the left vocal cord. The cough is usually harsh and clanging, and the voice almost a whisper. The lung percussion is normal throughout, the inspiration is rather harsh and prolonged, and there are a few rhonchi, apparently propagated from the larynx. The pupils are equal, and there is no evidence of any pressure on the sympathetic. No dysphagia, no pain, or other evidence of erosion of any bones. Urine clear, acid, specific gravity 1018, no albumen.

Diagnosis.—A large fusiform aneurism, involving the whole of the transverse portion of the arch, especially the anterior and upper surface; the mouth of the innominate is involved, but not to a great extent.

Second Case.—The following patient has only been recently admitted, and in many respects shows a marked contrast to the one which I have just related, though I believe a corresponding portion of the aorta is involved.

J. B., aged 54, labourer, admitted under the care of Dr Barr, November 10, 1897, complaining of great swelling of the head and neck, and difficulty of breathing.

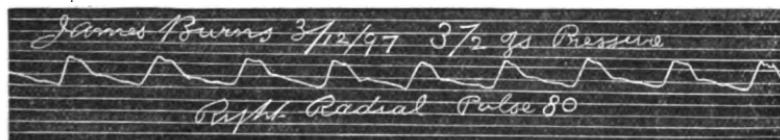
He is a robust, plethoric man, who has always enjoyed good health, and has been a free drinker of both beer and spirits. His occupation, that of a labourer, has involved heavy work. He had a chancre twenty years ago, but there do not appear to have been any secondary symptoms, and there are now no cicatrices or any other evidence of constitutional syphilis.

Present illness began ten weeks before admission. He had been working all night, and in the morning he had an attack of coughing and retching—not uncommon events in his history. During the coughing his face swelled, and since then this swelling has got gradually worse, and has now so extended as to involve the head, neck, and upper extremities. For some years he has been troubled with a cough, but this has not been worse of late, and has no doubt been associated with his drinking propensities, as there are no signs of chronic lung mischief.

Present condition.—He is a short, robust, plethoric, well-nourished man. The very striking feature in the case is the extreme venous congestion of the head, neck, and upper limbs.

The whole of these parts are much swollen, but there is no oedema except as a brawny condition of the face, in which the capillaries are large and injected. The condition is one of intense venous congestion, from mediastinal obstruction to both innominate veins. As the arterial tension is high, thus driving the blood through the capillaries, there is no oedema, and the venous obstruction has told first on the large proximal veins; thus the swelling is greater in the arms than in the forearms or hands, though in fact every vein seems distended to its utmost limit. Both supraclavicular spaces are distended with large veins, and the veins in the upper part of front of chest are distended. The venously congested parts have a rather livid purple colour, but the finger nails and other capillaries have an arterial hue. The pupils are of normal size, the left being slightly larger than the right; both react to light and accommodation.

Pulse 84, regular, tension high, both radials equal.



Over the manubrium sterni and inner ends of first and second right and left costal cartilages, with the corresponding interspaces, there is area of dull percussion, with a fairly well-marked heaving systolic impulse. This impulse is rather more marked now than on admission, and there is now distinct tracheal tug-ging, which was not then perceptible. There is no murmur over this dull area. Pulsation can be felt in the suprasternal notch.

Heart.—The apex beat is seen and felt in the 5th interspace below and outside the nipple line, $5\frac{1}{2}$ inches from mesial line. The heart sounds are dull, and the sound is accentuated at the right border of upper half of sternum. There are no cardiac murmurs.

The air does not enter either lung well, and the chest expansion is not good, the breathing being chiefly abdominal. The sub-costal angles are wide; there is evidence in front of slight emphysema. There is marked tracheal stridor; there are sibilant

rhonchi, and over the whole chest the vesicular murmur is feeble.

Tongue red, rather denuded of its epithelium, and slightly furred. It is not swollen, and in this respect contrasts with his large face and swollen lips. Bowels usually constipated. Abdominal organs normal.

The extreme obstruction to return venous current at first led to the suspicion that there might be a rapidly growing mediastinal tumour (and in fact this opinion was recently expressed by one good observer when I exhibited him at the Medical Institution), but the improvement of the patient under treatment, the tracheal tugging, the high-tension pulse, and the great delay in the radial pulse, combined with the other symptoms, have confirmed me in my opinion that this man is suffering from an aneurismal dilatation of the upper half of the ascending portion and the upper and posterior surface of the transverse portion of the arch of the aorta. In fact, these signs are so positive of aneurism that there is now no suspicion of any other disease left in my mind.

It is quite true that venous obstruction is much more commonly associated with a mediastinal growth than with an aneurism; and in fact it was this obstruction which on the first observation led to the suspicion of a rapidly growing tumour, but that view has had full consideration, and, under the prominence of other signs, has been set aside. You will notice the extensive area and peculiar character of the swelling. It is purely venous: the high arterial tension drives the blood through the capillaries with considerable velocity, and so there is no oedema, but simply an accumulation of blood in the veins. There is no sign of backward pressure, such as venous pulsation, but simply an obstruction towards its onward movement; hence the swelling is greatest close to the obstruction. There is some pressure on the trachea, thus obstructing the entrance of air; but there is no difficulty of swallowing, nor any evidence of pressure on either recurrent laryngeal nerve.

The treatment has been light dry diet, rest in bed, iodide of potassium, and a saline each morning. You now see that considerable improvement has taken place, which would scarcely

have happened if he had been suffering from any malignant disease.

In dealing with an aneurism of the thoracic aorta, which has not ruptured or perforated the chest walls, you have invariably a *true* aneurism, the walls of which contain one or more of the three coats of the vessels. The enlargement is frequently spoken of as an aneurismal dilatation of the vessel when it involves a considerable tract, and has not assumed a globular, fusiform, or sacculated character. You have recently had an opportunity of seeing in the post-mortem room a good example of *dissecting* aneurism; and in a recent fatal case under my care of ulcerative endocarditis, the disease had destroyed the aortic valves, and eroded through the origin of the aorta, forming a false aneurism between that vessel and the right auricle.

The Etiology and Pathology.—In the *Liverpool Journal* of 1881 I published a paper on the etiology of aneurism, and the views then expressed are in the main embodied here. Aneurism cannot occur in a previously healthy aorta; there must be a degeneration or solution of one or more of its coats before any circumscribed increase in the lumen of the artery can take place. I have submitted a healthy aorta to an internal fluid pressure of 10 lb. to the square inch without injuring any of its coats. The etiology of aneurism, therefore, resolves itself into the pathology of those degenerative changes which give rise to weakening or rupture of one or more coats of the vessel. Of all morbid processes associated with aneurism in a causal relation, endarteritis stands first, and shall therefore engage our primary attention; but before dealing with this subject, we must glance briefly at the anatomy of the aorta. This artery differs from those of smaller calibre in the enormous amount of elastic and white fibrous tissue which almost completely replace the muscular tissue of the middle coat. The external coat is very strong, and is composed of white fibrous tissue and longitudinally disposed elastic fibres, while the internal coat, like that of other arteries, is divisible into three structures, viz., the endothelium forming the lining membrane, and consisting of irregularly polygonal flattened cells; a sub-

endothelial layer, consisting of a homogeneous connective tissue and star-shaped corpuscles, and it is in this layer that cell-proliferation most frequently occurs; and finally, elastic layers, composed of longitudinal elastic networks and the fenestrated membrane of Henle. This inner coat is quite devoid of blood-vessels, and is consequently nourished by imbibition, not from the blood circulating in the vessel, but from the nutritive fluid exuding from the *vasa vasorum*, which are distributed in the outer and middle coats. These little nutrient arteries divide into small branches on the surface of the artery, which enter the external coat, where they form a network, and a few penetrate into the middle coat. In the external coat there are a few lymphatic vessels.

The want of direct blood supply to the inner coat, while it renders it less liable to acute inflammation, makes it more liable to degenerative changes of a low chronic inflammatory character.

The intima is nourished by imbibition, which must take place in great part during the period of the vessel's repose, *i.e.*, between the pulsations, when the vessel is lax and not stretched. This period may be broadly stated as occupying an equal time to that of distension, but when you get high arterial pressure there is no proper period of relaxation, but merely periods of greater or less distension. This constant straining from high blood pressure soon leads to mal-nutrition of the inner coat, a chronic irritation or inflammation, which gives rise to hyperplasia of the cell elements in the sub-endothelial layer of the intima. This cell proliferation first appears as small white or yellowish-white patches, which gradually increase in size, and run together forming larger patches, and these, from want of proper blood supply, soon undergo retrograde metamorphosis, and become more yellow from fatty degeneration. The corpuscles quickly break up, and then you have got semi-solid masses composed in great part of oil globules and cholesterine crystals, and known as 'atheroma.' These atheromatous patches are situated in the deeper layers of the intima, and not only directly impair the vessel's elasticity, but also, from pressure and interference with

nutrition, lead to fatty degeneration and wasting of the media, and thus impair the elasticity and stability of the artery. This atheroma may go on softening and increasing in quantity, and may give rise to solution of the inner coat from pressure leading to molecular changes, and then finally be discharged into the vessel, leaving a wound or ulcer, through which the blood can directly act on the middle coat, separating its fibres, and so lead to aneurism. On the other hand, the atheroma may become hard and firm from the deposition of lime salts, which give rise to the condition known as calcification. These calcified masses, like their progenitors the atheromatous patches, are first situated beneath the endothelium, but after a time this gives way, and the calcareous plates project into the lumen of the vessel. Calcification also leads to loss of elasticity, localised destruction of the inner coat, with wasting of the media, and consequent lessening of the strength and firmness of the vessel, and so is a frequent source of aneurism.

High arterial tension, of which we have been speaking as the cause of these degenerative changes, is produced in one or both of two ways, viz., by incessant resistance to the outflow of blood through the capillaries, or by greater inflow, owing to increased action of the heart, the former being by far the most important factor, and generally governing the latter.

This high tension and its effects are well exemplified in cases of chronic Bright's disease, and in the labouring population, from the resistance to the capillary circulation, owing to over-work and the imbibition of large quantities of malt liquors, which not only raise the tension by increasing what Johnson calls the stop-cock action of the arterioles, but also by keeping the vessels in a state of constant repletion, thus rendering them more readily affected by any sudden strain or increased pressure.

In those of our race who are subjected to an amount of toil inconsistent with the capabilities and maintenance of the integrity of the human machine, we have not only over-work, leading to high arterial tension and its consequent effects,—strain of the arterial coats, loss of elasticity and contractility, with impairment of the strength of the vessel,—but we have also

the dire consequences of acute strain, giving rise to sudden rupture or stretching of one or more of the diseased coats, thus dilating the artery. From these causes, and others which will be mentioned further on, aneurism is a much more frequent effect of over-work than of Bright's disease.

Another strong proof of the potent influence of high blood pressure producing degenerative changes is afforded by the negative evidence of the rarity of atheroma in the pulmonary system, and the positive evidence that when it does occur there, it arises under the condition of high tension, such as happens in obstructive lung diseases, and in affections of the mitral valve, especially ~~mitral~~ ^{TON MED} ~~stenosis~~. In these diseases, as the strain is more or less constant in amount, and affects the whole arterial tree, the atheroma is pretty regular and general, and is most marked where the strain is greatest, viz., in the first portion of the pulmonary artery. Again I have seen well-marked atheroma in the pulmonary veins in the case of great mitral constriction.

A little evidence, which might at first sight seem to tell against the view of the atheromatous origin of aneurism, is afforded by the rarity of that affection in cases of emphysema or mitral obstruction, whereas in tubercular disease of the lungs, with cavities, there may be very little atheroma; but this is one of the commonest conditions under which pulmonic aneurism arises. The explanation of this apparent contradiction is simple enough: in obstructive diseases failure of the right ventricle takes place sooner than dilatation or rupture of the coats of the vessel, whereas in the case of aneurism in a tubercular cavity, the vessel was involved in the lung inflammation, and had undergone local changes consequent on the periarteritis. Besides, the walls of the vessel are not supported by lung tissue in the latter case.

Aneurism, although associated with those degenerative changes of which we have been speaking, as a result of high tension, is not a constant or even a common sequence of those changes. You may have most extensive and general atheromatous and calcareous degeneration without any aneurism, or, on the other

hand, you may have aneurism without much arterial degeneration. In chronic Bright's disease, and in the aged, atheroma is very common and extensive as the result of high tension, while aneurism is very rare; but such evidence as this does not disprove the causal relation in which atheroma stands to aneurism. It only shows that atheroma, although a predisposing cause to the disease, is not of itself usually sufficient to give rise to its spontaneous origin; and the amount of blood pressure capable of producing atheroma is not necessarily competent to give rise to the graver lesion of aneurism. When you have got arterial degeneration, then any straining of the coats of the vessel may lead to an increase in its calibre. Such straining may occur laterally from very high tension, and longitudinally in the aorta and its main branches from the statical blood column under high pressure, stretching the vessels, and in the arteries of the extremities from mechanical strain. From what I have previously stated it will be easily gathered that I believe sudden high tension, especially when associated with over-repletion of the vessels, to be a more potent agent in the immediate production of aneurism than chronic high tension. This is the reason that this affection is so common in our labouring population, and in our soldiers, who during drill are subjected to acute strain with constricted chests. In both cases you have got great bodily exertion leading to high tension and straining, and in the former instance the vessels may be over-repleted from imbibition, and in the latter case you have got in addition the deficient pulmonary area for oxidation, giving rise to overloading of the systemic vessels and increased arterial tension.

High arterial tension, which we have been considering, affects all the arteries, we might almost say, in direct proportion to their size, the arch of the aorta suffering most; but there are other forms of strain yet to be considered more fully which lead to degenerative changes, and more or less localise the atheroma. Besides the lateral straining from blood pressure, there may be longitudinal straining of the walls of the vessel, and this may occur independently, or be associated with high arterial tension. Atheroma is more frequently marked along

the greater curve of the arch of the aorta than along the lesser, not because the tension is higher in that part, but because there is also superadded the brunt of the blood current.

Again, atheroma is more common at joints than in the continuity of the vessel, because there is the brunt of the blood current during flexions, and the longitudinal straining of the coats during extensions: *e.g.*, popliteal aneurism is not uncommon among the Dublin carmen, owing to the vessel getting contracted or shortened under the influence of cold and wet during a long-continued flexion, and then the coats being strained during extensions of the limbs. In attempting to reduce an old dislocation of the humerus, every surgeon knows the danger of producing traumatic aneurism of the axillary artery.

Again, atheroma is much more common in the neighbourhood of large branches than in other parts of the same vessel, and this I believe to be readily explained by the following well-known physical law. When a given quantity of fluid has to pass through a certain length of tube in a given time, the smaller the calibre of the tube the greater the velocity of the current but the less the lateral pressure, and the tube might be reduced so much in calibre that the lateral pressure would be reduced to *nil*, and a hole might be made in the wall of the tube without any fluid issuing therefrom. Large branches are equivalent to an increase in the lumen of the vessel, with consequent increase in the lateral pressure, which we have before shown to be a great factor in the production of atheroma.

In a paper which I published in the *Edinburgh Medical Journal* of December 1876, on the effects of over-work on the heart and aorta, I directed attention to the sequence of the vascular changes arising from over-work, and showed that the right side of the heart was only primarily affected in cases of acute strain or prolonged muscular exertion, while in the majority of cases of over-work with constant high arterial tension, the left side of the heart and systemic arteries were first involved. I pointed out the differences between the effects of acute strain and chronic over-work, and of course an over-worked individual may be at any time subjected to acute strain.

I have shown how over-work leads to degenerative changes, and then acute strain may rupture or dilate the already diseased coats of the vessel.

The conclusions to which I came as to the sequence of the chronic morbid changes arising from over-work were as follows:—“(1) Hypertrophy, or hypertrophy with dilatation of the left ventricle, and a slight increase in the growth and capacity of the right ventricle to meet the greater requirements of the system: this condition is associated with high arterial tension, increased aortic recoil with greater supply of blood to the heart; (2) chronic inflammation of, and atheromatous changes in, the aorta and aortic valves, and frequently also in the coronary arteries; (3) loss of elasticity and dilatation of the aorta, consequently the blood is not propelled through the coronary arteries with its former momentum, nutrition fails, and dilatation of one or both sides of the heart takes place; (4) incompetence of the aortic valves, with reflux of blood during diastole, which tends to produce still greater dilatation of the left ventricle; (5) this extra strain is met by still further compensatory hypertrophy; (6) failure in the compensation, owing to defective nutrition, with still greater enlargement of the left ventricle and perhaps also of the right; (7) overloading of the pulmonary circuit, with or without incompetence of the mitral valves; (8) additional distension of the right ventricle; and (9) dilatation of the tricuspid orifice.”

When aneurism occurs the sequence varies, for that affection takes the place of, or is associated with, the third mentioned condition, and the other events may or may not happen. On the other hand, if early incompetence of the aortic valves take place before there is much arterial degeneration, you don't get aneurism, for low arterial tension prevents undue straining of the arterial coats. Just as I said in my paper that “inspiration has a conservative influence over the aortic valves, which to a certain extent counterbalances the effect of muscular exertion on the aorta and left ventricle, and that I did not know an instance, nor had I read of a case, of sudden rupture of the aortic valves arising under conditions where the chest would be fully expanded,”

so I now say that, where you have got aortic incompetence before there is much degenerative change in the arterial system, you rarely or never get aneurism. I know that in this view I differ from many writers, and some authors assert that great dilatation of the aorta occurs in cases of aortic regurgitation, from the dilated and hypertrophied left ventricle suddenly throwing a large quantity of blood into the aorta, thus straining and dilating its coats, but this is not in accordance with my experience. I do not say that a certain amount of dilatation may, and does, not take place, but, in my opinion, in those cases of greatly or aneurismally dilated aortas with aortic incompetence, the degenerative changes and consequent dilatation take place first and the incompetence afterwards. In short, the authors to whom I allude mistake the effect for the cause.

It has been noticed by Stokes and many other writers how frequently you get aneurism without any cardiac hypertrophy. It may then be pertinently asked, If high tension give rise to enlargement of the heart, and also to those morbid changes which lead to aneurism, how is it that hypertrophy of the heart is not always associated with that disease? The answer is, that in those cases where the aneurism is due to primary endarteritis as a result of high tension, and there is no cardiac hypertrophy, once the aneurism has fairly formed, the tension falls. The tension falls from the patient not being able to keep it up with over-work and other causes, and the aneurism, when large, acts as a blood reservoir, and never at any time offers any great obstacle to the circulation, so that even if there be enlargement of the heart during the early degenerative changes, the compensatory hypertrophy has time to disappear before you have an opportunity of examining the organs on the *post-mortem* table.

Syphilis is generally looked upon as a potent cause of aneurism, but as to the mode of production, even in the present day, views are very vague and indeterminate. A large number do not trouble themselves as to how the syphilis acts—the *post hoc propter hoc* style of argument is sufficient for them; if the patient has aneurism, and acknowledges to have had syphilis, then the

syphilis is set down as the cause of the aneurism. Both our patients satisfy these conditions, but we must look a little more minutely into the subject. Syphilitic disease of the smaller arteries is well known and easily recognised. Heubner, whose views are generally accepted, looks upon this disease as a specific endarteritis, the cell proliferations commencing in the sub-endothelial layer. Syphilitic neoplasms lead to narrowing of the lumen of the vessel, become organised and converted into cicatricial tissue, and do not undergo fatty degeneration. Syphilitic changes are essentially fibrous in character, whereas aneurism is usually associated with fatty and atheromatous degeneration. Aneurism is about three times more frequent in the army than in the navy, not because our soldiers are more syphilitised than our sailors, but because they are subjected to greater strain and wear tight clothing. Dr Byrom Bramwell¹ gives an excellent explanation as to how syphilis impairs the nutrition of the aorta. He holds that it attacks the *vasa vasorum*, and so leads to mal-nutrition of the walls of the main vessel. Dr George Oliver² has noted "the absence of the normal postural variation of the radial calibre in the subjects of acquired syphilis." He thinks "that the interior of the whole arterial tract may, in the first instance, become so damaged by the syphilitic virus as to cripple the physiological play of the tube; and it is conceivable that the textural injury might be so slight as to readily elude detection by the finger. The after-history may, however, in certain cases, reveal the development of advanced and palpable changes—such as obvious arterio-sclerosis and aneurism."

In our first patient there is too much atheroma of the radial artery for any postural variation in the pulse to be noticeable; and in the second case, the very high tension at first prevented the appearance of any marked difference in calibre; but now that the tension has been lowered by treatment, the calibration of the right radial artery, as measured by Oliver's arteriometer, is 2·2 mm. in the recumbent, and 2·8 mm. in the sitting posture. In this case I don't suppose that syphilis has played any part in the rôle of causation.

¹ *Diseases of the Heart and Aorta*, 1884.

² *Pulse-gauging*, 1895.

With regard to alcohol, it undoubtedly leads to degenerative changes, but of itself it will not give rise to aneurism. It leads to fatty degeneration and loss of arterial tonicity, with all its evil effects, rather than to any circumscribed affection of a vessel. But when you get a hard worker and a hard drinker, you have two important factors leading to atheroma. Of all libations, I consider large quantities of malt liquors, such as beer, the worst, on account of their keeping up high tension, and also leading to a chronic repletion of the vessels.

In our second patient, the alcohol not only contributed to the degenerative changes, but it set up the catarrhal condition which gave rise to the violent attack of coughing and retching which were the immediate forerunners of the aneurism.

Embolism is generally looked upon as an important cause of aneurism, though there is perhaps a little difference of opinion as to the mode of causation. Some hold that you may have an aneurism on the distal part of the vessel to the embolic plug, owing to great blood pressure from increased collateral circulation, while others, I think correctly, hold that only inflammatory emboli, which set up inflammation or ulcerative changes in the walls of the vessel at the seat of the plug, and thus directly weaken the artery, are capable of giving rise to the disease. Aneurism thus produced is, we might say, always associated with rheumatic or ulcerative endocarditis, generally occurs in the young, and affects both sexes alike. You have recently seen a case of double aneurism, affecting each primary division of the pulmonary artery, arising from embolic plugs, which, in the sequence of events, arose from a patch of ulcerative endocarditis on the interior surface of the right ventricle.

Aneurism occurs most frequently between the ages of 30 and 45, the period of greatest bodily activity, and is vastly more common in males than in females, especially during this period, as men are subjected to much greater strain than women. At earlier ages the comparative frequency in the two sexes is perhaps more evenly balanced, as the causes are other and more general than strain and other mechanical injuries.

In our soldiers and hard-working labouring population

aneurism is very common, and in them the arteries which are subjected to the greatest strain, and exposed to accidents, viz., the aorta and vessels of the extremities, are chiefly affected. On the other hand, in females, aneurism of these vessels is especially rare.

Anatomical Relations of the Thoracic Aorta.—For convenience of description, the thoracic aorta has been divided into the arch and the descending thoracic aorta; the arch being further divided into the ascending, transverse, and descending portions. As it is necessary, for the sake of accuracy in diagnosis, to have a fair knowledge of the anatomy of these parts, I shall refresh your memories on a subject with which you are no doubt all familiar from your anatomical studies. The statements which I am about to make, and which you have been frequently taught, are approximately accurate in the vast majority of healthy hearts and aortæ, but in cases of disease, and especially in the disease which we are now considering, there is often considerable displacement, for which due allowance must be made.

The *ascending portion* of the arch arises from the base of the left ventricle. It is at first deeply situated behind the pulmonic artery and the sternum, on a level with the junction of that bone and the lower border of the third left costal cartilage. It passes upwards, forwards, and to the right, until it reaches the upper border of the second right costal cartilage, and often a portion of the vessel reaches beyond the right border of the sternum, encroaching on the second and first intercostal spaces. At its origin the left auricle is situated posteriorly and the pulmonary artery in front, but it quickly emerges from behind that vessel and lies on its right side. It now comes into contact with the right auricle, and has the superior vena cava lying on its right, and the root of the right lung posteriorly. This portion of the arch measures about $2\frac{1}{2}$ inches in length, and for the first two-thirds is inclosed with the pulmonary artery in a sheath of the pericardium.

The *transverse portion* of the arch commences at the level of the upper border of the second right costal cartilage, and is diverted slightly upwards, backwards, and to the left behind the

sternum, from which it is separated by the mediastinal fat and the remains of the thymus gland; it finally dips deeply backwards and downwards, until it reaches the left side of the body of the third dorsal vertebra, where it ends in the *descending* portion of the arch. In front, the transverse portion of the arch, especially during inspiration, is somewhat overlapped by both pleuræ and lungs. The left pneumo-gastric, the left phrenic and superficial cardiac nerves, and the left superior intercostal vein cross in front; while posteriorly are situated the trachea, the oesophagus, and the thoracic duct, and the left recurrent laryngeal nerve, which winds round the arch and passes upwards and inwards to reach the larynx. Below the concave surface are situated the bifurcation of the pulmonary artery, the remains of the ductus arteriosus, which connects the left branch of the pulmonic artery with the aorta, and the left bronchus comes forwards underneath the arch to enter the root of the left lung. From the upper surface of the arch the great vessels arise, and in front of these vessels, immediately above the arch, lies the left innominate vein. At its origin on the right lie the superior vena cava, the right pneumo-gastric and phrenic nerves.

The *descending portion* of the arch passes downwards and slightly inwards in contact with the bodies of the fourth and fifth dorsal vertebræ, terminating at the lower margin of the fifth vertebra in the descending thoracic aorta. Anteriorly it is covered by the root of the left lung; on its right lie the oesophagus, the thoracic duct, and the spinal column; while to the left, and posteriorly, lie the pleura and left lung.

The *descending thoracic aorta* is directed downwards and slightly inwards from the side of the lower border of the fifth dorsal vertebra until it reaches the front of the body of the twelfth dorsal vertebra, when it passes through the opening between the crura of the diaphragm to end in the abdominal aorta. It is situated close to the vertebræ, and follows any curve there may be in the spine, and is fixed in position by the intercostal arteries. Anteriorly are situated the root of the left lung and the posterior surface of the pericardium and heart. At the upper portion the oesophagus lies to the right side, but at the

level of the tenth dorsal vertebra it passes in front of the vessel; close to it, on the right, are the azygos vein and thoracic duct, which pass with it through the same opening in the diaphragm; on the left side and posteriorly are the left lung and pleura.

Symptoms and Physical Signs.—Aneurism affects the thoracic aorta much more frequently than all the other arteries of the body, and of this portion of the vessel the ascending and transverse portions of the arch are most commonly involved. In the elucidation of the origin and progress of aneurism it might be well to further subdivide the ascending portion of the arch into two parts. When an aneurism arises at the root of the aorta, it usually occurs in one of the sinuses of Valsalva, and rarely attains much size. The course of the disease may be entirely latent, and the first symptom may be the collapse from rupture of the sac into the pericardium. When an opportunity has been previously afforded of examining such a case, the second sound will be found to be much accentuated, and there may be a pericardial rub or slight systolic murmur, from pressure on the pulmonary artery. It is not often that incompetence of the aortic valves takes place, but where such an occurrence happens it stays the further progress of the disease, and markedly lengthens the patient's life. In fact, as I have often stated, aneurism of the aorta does not arise in cases of aortic regurgitation, and when the latter lesion occurs subsequently, it serves as a conservative lesion, which improves the prognosis of the case.

Aneurism affecting the second subdivision of the *ascending portion* of the arch usually arises from the right and anterior surface, projecting upwards and to the right, and often erodes the sternum, and the fourth, third, and second right costal cartilages. The pulsation is most marked to the right of the sternum. The first sound is often muffled, and may or may not be accompanied by a systolic murmur, while the second sound is accentuated. The parts most frequently pressed upon by an aneurism in this situation are the superior vena cava and the right lung. The aneurism frequently terminates by rupture into the pleura. I have seen a case where the aneurism arose from the right and posterior aspect, extending downwards in front of the spine,

eroding the vertebræ, and pressing on the right auricle and inferior vena cava. In such cases, when the patient is lying on his back, if you make firm pressure over the praecordium, a diffuse heaving pulsation is felt. When the patient leans forward or assumes the prone position, the heart falls forwards and this pulsation is not felt.

Another similar case is at present under my care, where there is great obstruction to the inferior vena cava, but as aortic incompetence has taken place, the further progress of the disease will be less rapid.

Aneurism of the *transverse portion* of the arch. The portion of the vessel up to the origin of the innominate artery is frequently involved in aneurisms affecting the second subdivision of the ascending portion of the arch, and the symptoms are similar, such as enlargement and pulsation towards the right of the sternum, and pressure on the superior vena cava. When the transverse portion is alone involved, the aneurism usually arises from the upper and posterior aspect, extending upwards, so that pulsation can be felt in the suprasternal notch as well as diffuse pulsation over the upper part of sternum, second and third costal cartilages, with their intercostal space. The innominate artery may be involved in the aneurism, but very rarely the other great vessels. The trachea is usually subjected to pressure, and frequently the left recurrent laryngeal nerve, while the situation of the left bronchus in the concavity of the arch enables tracheal tugging to be easily felt when that organ is made *taut*. In some cases, as in our first, the front of the arch is involved, and you get a localised heaving pulsation in the second and third left interspaces. Death may arise from direct pressure on the trachea, or by rupture into the trachea, left bronchus, or left pleural cavity.

In some cases the aneurismal dilatation is so large as to involve the upper part of the ascending division and the whole of the transverse portion of the arch. In such cases an aneurismal murmur is not uncommon, but the absence of such is no evidence against the case being one of aneurism.

Aneurisms of the *descending portion* of the arch are usually

directed backwards and to the left, erode the dorsal vertebræ and compress the left lung, and commonly rupture into the left pleura. In such cases a systolic murmur is often heard in the left interscapular space.

Aneurism of the *descending thoracic aorta* erodes the bodies of the last three or four dorsal vertebræ, and generally gives rise to much pain in the lower dorsal region. There is usually evidence of compression of the lower lobe of the left lung; and from direct irritation of the left pleura and pressure on the vena azygos, there is often effusion into the left pleura, while rupture of the sac generally takes place into this cavity. There is often dysphagia from pressure on the oesophagus, and even rupture of the sac may finally take place into this tube. As aneurism here is situated behind the heart, we get a heaving pulsation when firm pressure is made over that organ.

Diagnosis.—When you have a circumscribed, dull area, with marked expansile pulsation in the course of the aorta, an accentuated aortic second sound, pain and pressure symptoms, the diagnosis is comparatively easy; but if treatment is to be successfully employed, the diagnosis should be made long before the symptoms become so palpable.

Pulsating empyema really presents no difficulty, but it is often exceedingly difficult to differentiate between a solid mediastinal tumour and an aneurism. In the case of a tumour the dull percussion is usually not so localised, and the pulsation is usually not so great; but in the case of a large mediastinal sarcoma, in which the aorta was imbedded, I have felt the pulsation as marked as in any aneurism. In the case of tumour there is very frequently a systolic murmur from pressure on the aorta, but the second sound is not accentuated. On the contrary, the heart sounds may be short and feeble where there is marked cachexia, whereas in aneurism the patient usually presents the signs of good or even vigorous health. Bronchial breathing is generally heard over a tumour, but is absent over the dulness of an aneurism. Pain is much more pronounced in aneurism, and also erosion of bones and organs, which rarely happens in cases of tumour.

Aneurism is more frequent than tumour ; occurs mostly in males between the ages of 35 and 50. It occurs in sanguine healthy-looking individuals, who have had hard work. In the rôle of causation we have marked arterial degeneration, syphilis, alcoholic excesses, violent strain, and severe coughing attacks.

Pressure Symptoms.—Pressure on the superior vena cava may occur in either case, but is much more frequent in tumour ; hence venous engorgement of the head, neck, and upper extremities is most common in the latter affection. There is a distinction in the nature of the engorgement which helps the diagnosis. In tumour the heart's action is often feeble, hence with the venous engorgement there is usually increased transudation from the capillaries, with œdema of the hands and arms ; on the other hand, in cases of aneurism the heart's action is good, the pulse tension high, the blood driven through the capillaries with considerable velocity, hence there is no marked œdema, but general venous engorgement, which is more marked close to the seat of obstruction than at the periphery. These distinctions, together with tracheal tugging, robust and vigorous appearance of the patient, and improvement under treatment, enabled me to settle the diagnosis in our second case.

Pain is more common in aneurism, while cough is equally common in both cases. Pressure on the recurrent laryngeal nerves, dyspncea, and dysphagia occur in both diseases. Marked delay, and differences in the two radial pulses are only present in aneurism, while the differences in the two pulses only occur when some of the main branches are involved in the aneurism.

Cardiac valvular lesions are occasionally, and general atheroma usually, present in aneurism, but comparatively rare in tumour. Secondary growths in other organs occasionally point out the cancerous or sarcomatous nature of the disease, and, as a rule in such cases, the progress is rapid, from bad to worse.

Prognosis.—The duration of the disease is a very variable quantity, and largely depends on its early recognition and proper treatment. The average duration is said to be about two years, but I have known cases in existence for many years ; while a short time ago a case was brought by the ambulance into the

Northern Hospital, under my care, where an aneurism of a sinus of Valsalva had burst into the pericardium, and that was the first time the patient had been examined by a medical man. Death is almost the invariable termination of the case, but a few rare cases of cure have been recorded. Such cases are only possible in well-marked sacculated aneurisms with a small opening, and are brought about by the deposition of laminated clot. Life is usually much prolonged, not by attempts at cure, but by endeavours which lessen the further progress of the disease. The fatal termination is generally brought about by rupture of the sac into the pericardium, the pleurae, the trachea, bronchi, oesophagus, and very rarely externally, or even into the spinal canal. In a few cases death arises from gradual exhaustion, or from some intercurrent complication, such as pneumonia or bronchitis, in great part set up by the pressure of the aneurism.

Treatment.—The vast majority of cases are treated by a routine attempt at cure, without any other recognition of the nature of the aneurisms with which we have got to deal. Solidification of the sac by the deposition of layers of fibrin is only possible in a well-marked sacculated aneurism, with a small opening into the aorta. This is best effected by prolonged absolute rest and a low dry diet. Such cases, however, only form a small minority; and what advantage can there accrue from treating the vast majority on these routine principles, which are bound to fail, and which in other respects must injure the vitality of the patient and of his arteries? If the aneurism has attained large size, and is pressing on any important structure, then absolute rest, low dry diet, saline purgatives, and other remedies which reduce arterial tension are imperatively demanded.

In those cases which are recognised early, and where there are no reasons to suppose that the aneurism is so distinctly sacculated that the remora of blood will admit of the deposit of fibrin, the best treatment is to adopt those measures which will lessen the further progress of the disease. Such objects are not attained by absolute rest in bed, but by allowing him a moderate but sufficient amount of walking exercise on the level; a light,

dry, nutritious diet,—not more than enough to maintain a healthy equilibrium. All alcohol must be absolutely interdicted. The blood pressure must be lowered and kept low by saline purgatives: iodide of potassium, in 10 grain doses, thrice daily, to which may be added some of the other salts of potassium, and antimonial wine. If the patient be distinctly gouty or syphilitic, appropriate remedies must be employed. If there be much pain, morphia is our sheet-anchor, but in some cases chloral hydrate answers equally well. If pneumonia, bronchitis, pleurisy, or pericarditis arise, we must employ suitable treatment, and about the first indication, under such circumstances, would be confinement to bed.

Mental excitement must be avoided, and sexual intercourse forbidden. All business avocations need not be stopped, but there must be no bodily work nor mental worry. Straining at stool and all violent attacks of coughing must be obviated. Galvano-puncture is only admissible when there is a risk of external rupture, and such an occurrence is very rare.

In every individual a careful survey of the state of the circulation is often desirable, but I am afraid some such surveys occasionally occur to the detriment of the patient. A patient with a small pulse is often said to have a feeble circulation, and is accordingly plied with digitalis, though at the same time his pulse tension may be very high and his heart's action powerful. I am afraid this indiscriminate use of digitalis often works mischief; I have known such a case where aneurism was subsequently suspected, but all the symptoms of such disappeared on the substitution of salines for digitalis. Some years ago I saw a case of suspected aneurism of the descending thoracic aorta, with severe radiating pain, and a marked heaving pulsation when firm pressure was applied over the praecordium, with the patient lying on his back. This man was put on a regulated diet, all alcohol was interdicted, his emunctory functions received attention, and he was allowed to go about his business as usual. His symptoms soon disappeared, and he has since remained quite well. Treat your patients on rational principles, and even in the worst cases of aneurism, though life may be short, it will be tolerably durable.

NOTE ON THE WELLS AT LLANDRINDOD. By HUGH
R. JONES, M.A., M.D., D.P.H. Cantab., B.Sc. Lond., *Medical
Tutor at the Royal Southern Hospital, Liverpool.*

THE wells at Llandrindod have long been held in great repute, and the spa life of the place began in the middle of last century. Every year an increasing number of the residents of Liverpool visit the Welsh spa during the summer in order to drink the waters. At one time the pilgrims were nearly all Welsh, but of late years many English people from all parts of the country have been attracted thither by the fame of the medicinal virtues of the springs. The properties and uses of the waters have been comparatively little studied except at Llandrindod itself, so that intending visitors are rarely able to obtain before leaving home medical advice as to the particular course of treatment most suitable for them. Even under the best advice it occasionally happens that the first few doses of the waters cause a temporary aggravation of the patient's complaint, or else induce an attack of acute indigestion. Very often the choice of the water depends upon the advice and example of the patient's friends, and the result is often serious. It must also be remembered that cases of chronic functional disorder rather than of actual organic disease derive greatest benefit from a visit to a spa. Cases of acute illness or of advanced organic disease are generally aggravated by any course of mineral waters.

Llandrindod is in Radnorshire, on the L.N.W. main line to South Wales, and is $3\frac{1}{2}$ hours distant from Liverpool by rail. It is situated about 700 feet above sea-level, on a plateau which extends from the spurs of Plinlimmon on the north to the Breconshire Beacons on the south, and from Radnor Forest on the east to the Cardiganshire Hills on the west. The geological formation belongs on the eastern side of Llandrindod chiefly to the Silurian system, and to the Cambrian on the west. The district is sparsely populated; there are no mines nor manufactures in the vicinity; the air is pure, bracing, and invigorating; the scenery is attractive; there is an extensive area of common

land, and there are numerous interesting walks in the neighbourhood. The sanitary condition is satisfactory, both water-supply and drainage being excellent. The first impression produced upon strangers is that of quiet seclusion and restfulness. The season extends from June to September, but there are numerous visitors at Whitsuntide, and at Easter if that festival fall late; and if the weather be mild, many remain into October.

Llandrindod resembles Harrogate in many respects. Both are situated on high land some distance from the sea, in sparsely populated districts; both are centres for numerous country excursions. Their waters have also a general similarity in composition and properties; and if the Llandrindod waters be the more dilute, they are scarcely less unpalatable than those of Harrogate. Llandrindod has one merit—it is, if less fashionable, much less expensive than its English rival.

The wells occur in two groups, each group consisting of saline sulphur and chalybeate waters. The older wells are situated in the grounds of the Pump-House Hotel; those more recently discovered, in the Rock Park. The chemical composition of the waters in the two groups is very similar. It is an interesting question why sulphur and chalybeate springs are so often associated. It is generally accepted that both result from the decomposition of iron pyrites, but why the sulphur water should take a different course from the chalybeate is difficult of explanation.

1. *The Saline Well.*—The chief mineral constituent is chloride of sodium, of which there are about 300 grains per gallon. There is also a considerable quantity of chloride of calcium. This water is chiefly used for its aperient qualities. It is taken early in the morning, before breakfast, from 6 A.M. to 9 A.M. The quantity usually prescribed is from 30 to 50 ounces. It is best taken slowly, half a pint at a time; and the effect is increased if it be sipped, and taken warm. Between each glassful a brisk walk of 20 minutes' duration is taken along a track leading to the small but picturesque lake. A free, copious, and easy evacuation speedily results, and the contents of both large and small intestines are voided. An amazing appetite for breakfast is

developed. Apart from the aperient action of the water, the salt seems to effect a profound alterative influence on metabolism, and a marked improvement in the nutrition of the body is noticed in a few days. For the first two or three mornings the water is apt to disagree, from a wrong quantity being taken, there being either excessive aperient action or none at all. Besides, the appetite is lost, considerable abdominal uneasiness is experienced, and sleepless nights are passed. The ill effect of the water is generally obviated by taking an aperient overnight, and beginning with a medium dose. The saline water is found useful in chronic constipation, in torpidity of the liver, and in certain forms of dyspepsia.

2. *The Sulphur Spring.*—The chemical analysis of the sulphur water shows that there is a considerable quantity of dissolved gases,—about 2·6 cub. in. of sulphuretted hydrogen and 1·75 cub. in. of carbonic acid per gallon. The mineral constituents are chiefly the chlorides of sodium and calcium. The medicinal effects are stimulant, diaphoretic, diuretic, and alterative. In small doses it creates thirst, and if taken in excess produces a feeling of lassitude, and even vomiting and diarrhoea. It acts as a cholagogue, and stimulates the general nutritive processes of the body; and it is therefore especially valuable in the treatment of that perverted metabolism which results in the excessive deposition of fat. Its diaphoretic action makes it useful in certain forms of skin diseases, e.g., eczema and psoriasis. Its diuretic properties increase the elimination of waste products by the kidneys, and therefore gouty and rheumatic patients are benefited. Its alterative influences are shown by its effect upon chronic gastric catarrh, and by the marked diminution in the size of enlarged glands. It is therefore useful in struma. It is taken twice daily,—10 to 20 ounces in the forenoon, and an equal quantity in the afternoon. Sulphur baths may be obtained.

3. *The Chalybeate Spring.*—The original chalybeate spring is in the Rock Park, and is free. Analysis shows that in this case also the chief mineral constituents are the chlorides of sodium and calcium. In addition, there is a small quantity of carbonate

of iron. It has therefore a similar action to the saline water, and is often taken, like the saline, fasting, early in the morning, the dose being from 10 to 30 ounces. More usually it is taken in small tonic doses after food. The quantity requires to be carefully regulated, as it often causes considerable gastric derangement. It is recommended for anaemia, atonic dyspepsia, constipation, and for general debility.

The business of water-drinking occupies so much time, especially if all three be taken, that the day soon passes. This whole-time devotion to the pursuit of health is one of the chief advantages of spa treatment. During the two or three weeks' stay, the freedom from excitement and the leisurely activity, the change of scene and habits, the gentle exercise in pure bracing air, the early rising, and the regular action of the excretory organs, all combine for the restoration of health. There is no opportunity for over-exertion, which so often more than neutralises the benefit of a holiday. The *genius loci* insists upon going early to bed, upon plain diet, and upon moderation in alcohol, so that the patient is placed under almost ideal hygienic conditions. Whatever may be the share of the improvement in health really due to the medicinal virtues of the waters, it is certain that without their assistance it would be impossible to secure the whole-hearted co-operation of the patient in any system of sustained treatment.

There are good hotels and numerous boarding-houses, but the majority of visitors take lodgings. Private apartments may be obtained; it is, however, more usual to have a common living-room, in which many parties may be found. All cater for themselves, though they have their meals at the same hour at the same table. The social life at the Wells depends upon this custom. Owing to the restricted amusements, the visitor's enjoyment depends chiefly upon the company he may have. A shy and reserved man, without acquaintance, thrown upon his own resources, will find the Wells dull and monotonous; but there is a general absence of formality, and a readiness to include the new arrival in the house in any plan of entertainment that may be suggested.

AN ABBREVIATED LIFE TABLE FOR LIVERPOOL¹
 By HUGH R. JONES, M.D., F.S.S., and S. G. MOORE, M.B., D.P.H.

Expectation of Life—(Males).

At Age	ENGLAND. (Ogle.)	MAN- CHESTER.	GLASGOW.	LIVERPOOL DISTRICT. (Farr) 1848.	LIVERPOOL CITY. Hugh Jones and Moore. 1895.
0	41·3 years	34·7 years	35·2 years	25 years	34·2 years
5	50·9 "	45·6 "	47·0 "	42 "	45·9 "
10	47·6 "	42·7 "	44·3 "	41 "	42·9 "
15	43·4 "	38·8 "	40·5 "	37 "	38·8 "
20	39·4 "	34·6 "	36·9 "	33 "	34·8 "
25	35·7 "	30·7 "	33·3 "	30 "	31·0 "
30	32·1 "	28 · "	26·1 "	27 "	27·5 "
35	28·6 "	23·7 "	26·1 "	23 "	24·2 "
40	25·3 "	20 · "	21 · "	21 "	21·2 "
45	22·1 "	17·8 "	19·5 "	18 "	18·3 "
50	18·9 "	15 · "	16 · "	16 "	15·8 "
55	15·9 "	12·5 "	14·0 "	?	13·2 "
60	13·1 "	10 · "	10 · "	?	11·1 "
65	10·5 "	8·1 "	9·4 "	?	8·8 "

Expectation of Life—(Females).

At Age	ENGLAND. (Ogle.)	MAN- CHESTER.	GLASGOW.	LIVERPOOL DISTRICT. (Farr) 1848.	LIVERPOOL CITY. Hugh Jones and Moore. 1895.
0	44·6 years	38·4 years	37·7 years	27 years	36·4 years
5	53·1 "	48·0 "	48·2 "	43 "	47·7 "
10	49·7 "	45·4 "	45·4 "	42 "	44·7 "
15	45·6 "	41·5 "	41·6 "	38 "	40·6 "
20	41·6 "	37·3 "	38·0 "	34 "	36·6 "
25	38·0 "	33·3 "	34·6 "	31 "	32·7 "
30	34·4 "	30 · "	30 · "	27 "	29·2 "
35	30·9 "	26·3 "	28·0 "	24 "	25·9 "
40	27·4 "	23 · "	25 · "	22 "	22·9 "
45	24·0 "	19·8 "	21·6 "	18 "	19·8 "
50	20·7 "	16 · "	18 · "	17 "	17·1 "
55	17·8 "	13·9 "	15·6 "	...	14·3 "
60	14·2 "	10 · "	10 · "	...	12·2 "
65	11·4 "	9·1 "	10·7 "	...	9·8 "

¹ Read at the Medical Institution, 1896.

A life table is constructed from two census enumerations and from the deaths in a decade. In the census returns the population is classified according to age and sex. The ages are grouped in five-year periods, 'age periods' 0-5, 5-10, and so on to the age 25, and then in decennial periods, 25-35, 35-45, onward. This method of grouping is adopted to minimise the error caused by the habit of people stating their ages in round numbers—30, 40, and so forth; at the round ages an excess of population is returned. The mean population for the decade at each age period is then found; that is, the sum of the mid-year populations at each year of the decade. This mean population obviously represents the lives at risk at any age period. For the purposes of this table we have taken the decade 1881-90.

Now, if the deaths were known for the corresponding age periods, the construction of an abbreviated life table would be easy and straightforward. The deaths and population at an age period being known, the death-rate at that age period is found in the ordinary way, $\frac{\text{deaths} \times 1000}{\text{population}}$.

Once we have calculated the death-rate, at age periods, the deaths and populations are of no further use, so we shall confine our attention to the death-rates, which allow us to calculate the probability of living one year from any age.

Assume a death-rate of 20 per annum, and for the sake of simplicity a mid-year population of 1000. The death-rate being 20, 10 die between January and June, and 10 between June and December, if deaths, as must be assumed, take place at equal intervals. Therefore 1010 people are alive on January 1st and 990 on December 31st, and the probability of living one year = $\frac{990}{1010}$ and of dying $\frac{20}{1010}$.

$$\left(\frac{990}{1010} + \frac{20}{1010} = 1 = \text{mathematical expression of certainty} \right).$$

If, therefore, we multiply the number of people living on January 1st by the former fraction we obtain the number who are alive on December 31st. The fraction is known as p_1 for any age and the probability of living 2 years is p_2 , of

living 5 years p_5^5 , and so on. (If we toss a penny, the probability of a head turning up = $\frac{1}{2}$; of two heads in succession = $\frac{1}{2} \times \frac{1}{2}$ ($\frac{1}{2}$)² = $\frac{1}{4}$; of three in succession, $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$ = ($\frac{1}{2}$)³ = $\frac{1}{8}$. Of living one year p , of two years p^2 , and so forth.) Thus the fraction enables us to construct a table of survivors. It is usual to take 100,000 as the basis of a life table, and to divide the 100,000 between males and females in the proportion of male and female births,—in Liverpool as 50,768 are to 49,232.

By adding up the *complete* years of life lived by the 50,768 traced through their life till they be all dead, and dividing by 50,768, we obtain the expectation of life at birth, *i.e.*, the average lifetime enjoyed by each child born. This is the curtate expectation of life—shorter by 6 months than the complete expectation—for a life table population is assumed to be constant: *i.e.*, as many die as are born. Thus 50,768 die every year, and the average lifetime lived by them—6 months each—was not included in our previous calculation.

Two observations require to be made. (1) A separate method was adopted for the 0–5 age period, as the results given by the above method are not accurate at that period. We need not discuss this point now. (2) The Liverpool health reports return deaths in age periods 30–40, 40–50, and so on. We had to use deaths for the decennial periods 35–45, 45–55, in order to be able to make comparisons with other tables. The deaths were distributed by a graphic method. Areas equal to the number of deaths were charted, and a curve was drawn passing through these areas in such a manner that there was no abrupt change in its direction, and dividing them in such a way that the portion added was equal to the portion cut off, so that the areas bounded by the curved and vertical lines were still equal in area to the parallelogram representing the number of deaths. The point at which the curve cut the vertical lines gave a measure of the deaths at each age.

To discuss this and other points of interest bearing on the construction of the table would occupy time, which, we feel, can better be utilised in a discussion of the results obtained, since it is these latter which seem likely to be of interest.

Having thus briefly described the method adopted in the construction of the Liverpool Life Table, it is necessary to point out that, once the table be constructed, there are only three of the columns which afford any important indications concerning the healthiness of the community under consideration. The inferences to be drawn from the figures may, however, require to be modified by reference to other columns.

The first column referred to is the mortality column (M), which gives the mortality per thousand, or per unit, at each age period or at each age, according as the life table is complete or abbreviated. The table of mortality affords the best test of the vitality of a population at any age. For the probability of living through any year is a simple function of the mortality, being expressed mathematically by the fraction $\frac{2-m}{2+m}$.

At age 10 this fraction has the value of $\frac{99}{100}$ approximately—in other words, the chances of living at that age is measured by 99, and the chance of dying by 1.

At age 90, the fraction is equal to $\frac{7}{10}$; in other words, it is 7 to 3 that a person aged 90 dies within twelve months of that age.

This table is used for determining rates of insurance.

For purposes of comparison the death-rates at age periods are given for England and Wales, for Liverpool district, and for Liverpool city. It may be well to explain that by Liverpool district, is meant the registration district, which was not co-terminous with the municipal area. But it has been selected with the object of pointing out that in Greater Liverpool, though there will be a very considerable diminution in the general death-rate, and in the death-rate at all age periods, this diminution will not of necessity mean that the sanitary condition of the Older Liverpool will be in any degree improved. The diminution of the death-rates will simply depend upon the inclusion in the vital statistics of Liverpool of a large population with smaller death-rates than used to prevail in the smaller area. The statistics of Liverpool district for 1881-90, which are to be published in the next decennial report of the

Registrar-General, have been given by the courtesy of the Registrar, and the kindness of Mr Noel Humphreys, and show a marked improvement on the figures for 1861-70 at all ages, except at age 65 upwards. At that age a slight increase is reported, showing that the same change in mortality has happened in Liverpool district as has been noticed in England generally. Probably the figures for Liverpool city have been affected similarly; but the data in the Medical Officer of Health's reports are not available for ready comparison, and have not been worked out in detail.

The second column deserving attention is the column of survivors at each age, technically known as the L_x column. The figures at any age in this column are affected by events in *precedent* years. For example, the number of survivors at age 5 is determined by the mortality in the first, second, third, fourth, and fifth years of life. The column presents, in a simple and comparatively intelligible form, the process of the death of a population; it shows the ages at which deaths are most numerous, it enables us to determine influence of special factors on mortality, *e.g.*, the influence of occupation, etc. It also teaches the age constitution of the population.

The last column to which we shall call attention is the column of the expectation of life—the E_x column. The figures in this column are affected not by events in *precedent* years, but by events in *subsequent* years. For example, if excessive mortality from any cause prevail at any age period, whether from accidental causes, such as epidemics, or from more permanent causes, such as unhealthy occupation, then, of necessity the greater mortality results in a diminution of the total lifetime of the population, and thus the expectation of life is affected at the earlier age periods.

Before instituting any comparison of figures, it is desirable to consider what effect a diminishing population has upon the duration of life. The male population of the city diminished from 271,996 in 1881 to 252,436 in 1891—a decrease of about 7 per cent. At a few age periods there was an increase noted, but except at ages over 65 the increases were trivial and

negligible. The decrease was most marked under 5 years, being over 6000 in a population of 38,000—about 16 per cent. The increase was most marked at ages over 65, probably due in some measure to the saving of life at earlier ages. The combined effect of these alterations in age distribution will be to increase the expectation of life at ages below 65.

In 1841, *one in 30* of the population of the Liverpool district died every year. In 1891, *one in 37*. For England and Wales the rate is *one in 45*.

It may also be noticed that the mean age at death in England is 29 years. In 1841 it was 21 in Liverpool district, in Liverpool city for the decade 1881–90 it was nearly 24. This low figure is due to the excessive mortality in Liverpool at the earliest age period. The diminution of mortality at earlier age periods will increase the mean age at death, which will also be increased by the fact that the birth-rate in Liverpool is less by about 2 per 1000 than it is for the whole country.

The effect in England and Wales of the diminished mortality at earlier age periods has been to decrease the expectation of life at ages over 67, owing to the increase in mortality at the later ages, but even this increase in mortality is more than counterbalanced by the increased number of survivors at age 65.

On comparing the Liverpool life tables of 1841 and 1895, it will be seen that there is a greater expectation of life at each age period at the later date,—the most marked increase, as might be expected, being in the earlier groups. The difference at ages over 35 is scarcely appreciable, showing that the chief conditions tending to high mortality that have been, to some extent at least, successfully *remedied*, are the conditions which prevail at the earliest age periods.

One most important question requires to be considered in this connection: Of what advantage is it to the community that the death-rates are lower now than they were in previous years? It would benefit us little if there were saving of life at the earlier age periods, when the individual is of no, or of very little, advantage to the community, or at the later age periods, when the individual is so often a burden to the State. It would be tedious

and unprofitable to discuss here to-night, the statistical solution of this question. It was fully discussed by Mr Noel Humphreys before the Royal Statistical Society in 1883, where he analysed the effect that the recent decline in the English death-rate had on the duration of life. If we assume that the useful period of life is between the ages of 20 and 65 years, it is certain that there has been a distinct and definite increase of lifetime at that age period. We may therefore rest assured that those measures of sanitation, which have succeeded in lowering the death-rate, have been of immense economic value to the country.

From the comparison of the two Liverpool life tables, though they are not strictly comparable, it may be shown that many thousands of years of useful lifetime have been secured to the people of Liverpool. The data do not allow of any very accurate estimate, but we may calculate that at the ages 20-50 the additional lifetime lived amounts to no less than 2600 years of life per 1000 male births. The male births in Liverpool being over 8000 per annum, there is, therefore, an aggregate gain of 20,000 years of life.

Comparing the Liverpool, Manchester, and Glasgow life tables, it is seen that, except at age 0-5, the inhabitants of Liverpool enjoy on an average about 6 months more life than the inhabitants of Manchester, while the inhabitants of Glasgow enjoy between 1 and 2 years more lifetime than the inhabitants of Liverpool.

What conclusions are to be drawn from the life table which we have constructed?

1. That there is an excessive waste of child life in Liverpool. This was previously known, and has been previously discussed elsewhere by one of us, who endeavoured to show that this waste was to a large extent preventable. We have now shown that a saving of life at the earliest age periods results in an increase of the useful lifetime of the community. We cannot at present discuss the best methods of trying to accomplish this most desirable object.

2. That the chance of living a full term of years in Liverpool is less at all age periods than it is in England and Wales; in

other words, the conditions of life in Liverpool are not conducive to longevity. When the text of this life table is printed, it will be available for the determination of the influence of special causes in the production of this excessive mortality; for by excluding from our purview all deaths except say those from phthisis, we shall be able not only to estimate the effect of this disease upon mortality, but also its age incidence, together with the economic loss to the city from its prevalence. Too often the existence of a disease more fatal than the most violent outbreak of epidemic disease, claiming for its victims persons of all ages and classes, receives less attention than a few sporadic cases of enteric fever, or a mild outbreak of diphtheria.

It is necessary, in conclusion, to draw attention once more to the fact that a low death-rate does not of necessity mean perfect sanitary conditions, and the diminution in the death-rate of Greater Liverpool will not justify any relaxation of the sanitary activity which has already so greatly benefited the district.

Annual Death-Rates—(Males).

	ENGLAND AND WALES. 1881-90.	LIVERPOOL CITY. 1881-90.	LIVERPOOL DISTRICT. 1861-70.
0	61 per 1000.	94 per 1000.	144 per 1000.
5	5 " "	9 " "	16 " "
10	8 " "	4 " "	6 " "
15	4 " "	5 " "	9 " "
20	5 " "	7 " "	14 " "
25	7 " "	11 " "	20 " "
35	12 " "	19 " "	30 " "
45	19 " "	29 " "	43 " "
55	34 " "	51 " "	71 " "
65	70 " "	97 " "	119 " "

Reviews.

A HAND-BOOK OF THE DISEASES OF THE EYE, AND THEIR TREATMENT. By HENRY R. SWANZY, A.M., M.B., F.R.C.S.I. (*Sixth Edition, with Illustrations. London: H. K. Lewis. 1897.*)

THE estimation in which this text-book is held is evidenced by the unusual occurrence that it has exhausted five editions in a period of twelve years, the fifth edition only appearing in the early part of 1895. The present edition, appearing in March 1897, was necessitated by the exhaustion some months previously of its predecessor. In this latest edition there are twenty-six additional pages of text, owing to the elaboration of chapter xvii., on the Relation of Ocular Diseases and Symptoms to Organic Disease of the Brain and Spinal Cord, with Functional Derangements of Vision; and the more exhaustive treatment in chapter xix. of Tumours of the Orbit, with the Affections of Neighbouring Cavities which may simulate such.

The illustrations have been reduced by nine, owing to the omission of the first six pages, dealing with elementary optics, a knowledge of which is now assumed.

From our previous criticism as to the merits and method of this work we have nothing to retract, and its popularity with student, general practitioner, and specialist indicates that our high appreciation of this excellent manual has not been misplaced. We can confidently recommend its perusal as a thoroughly practical guide, and predict a long continuance of professional favour.

On one point alone would we offer a suggestion. The ambiguity as to the treatment of some of the more commonly observed eye affections might well be avoided, for it is only

calculated to induce confusion, when the definite treatment to be adopted is left to the hazardous opinion of any whose experience may be limited. Thus, in speaking of the treatment of purulent ophthalmia, we find the following statement:—"The iced compresses or Leiter's tubes should be kept to the eye *for an hour at a time, with the pause of an hour, and so on, or even continuously.*" (The italics are ours.)

It must be obvious that in such cases iced applications are either of value or of no value; and in order to avoid reactionary periods, should either be used continuously or not at all. Such vagueness weakens the value of otherwise very valuable suggestions; and by inducing doubt, necessitates appeal to other authorities.

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION. Vol.
XIV. Edited by DE FORREST MILLARD, A.M., M.D., Ph.D.,
Recorder of the Association. (Philadelphia: W. J. Dornan.)

THIS is a handsome and bulky volume of 742 pages, and contains thirty-six papers, all interesting, well written, and well edited. The President, Dr L. M. Tiffany, of Baltimore, considers the merits of intracranial operations for the cure of facial neuralgia, and gives a synopsis of 108 cases operated on by different surgeons. The paper is illustrated, and affords a large amount of information to surgeons who are forced to attempt this difficult, dangerous, and uncertain operation. Fortunately it is an operation rarely called for here, but there is no doubt it is sometimes absolutely necessary. The mortality is about 20 per cent. Tuberculosis of the male genital organs, of the female genital organs, tubercular peritonitis, the surgery of intra-thoracic tuberculosis, and tuberculosis of the superficial glands are treated of in five papers by Drs N. Senn, R. Abbe, Vanderbeer, G. R. Fowler, and De Forrest Millard. These papers were prepared at the request of the Association, and, together with a discussion on the Surgical Treatment of Tuberculosis, constitute an excellent epi-

tome, not only of the most recent advances in pathology and treatment, but also of the best recognised methods of operating for these diseases. It would be impossible in a short review like this to discuss such a wide subject, and we can only refer our readers to the original.

Dr A. T. Cabot discusses the question of castration for enlarged prostate, and compares it with prostatectomy; the conclusions he draws being, on the whole, in favour of the latter.

The first conclusion seems rather astonishing, namely, that in the matter of mortality prostatectomy has a slight advantage over castration. We have performed castration at all ages, and hitherto without any mortality, and we believe the deaths referred to by Dr Cabot are generally independent of the operation; that hopeless cases are subjected to what is considered a trifling operation, and that amputation of the little finger would be just as fatal as castration if performed for the same object. Again, the mode of operation influences the result very largely. The method generally recommended in books and papers is to make the skin incision below the external abdominal ring, and pull the testicle up out of its bed. This renders the wound specially liable to oedema and septic infiltration. The writer liberates the testicle at the bottom of the scrotum, stitching the stump to the skin there, so that there *cannot* be any trouble with the wound. The action of the operation is not, in the writer's experience, greater than for an operation similar in extent elsewhere, and the idea that *great* nervous prostration results is not a fact, but a myth handed down to us from the past.

It would be impossible to name, much less to review, all the remaining papers in the short space at our disposal. We would only say that no English surgeon's library should be considered complete without this annual volume. It illustrates the practice of the best of the American surgeons, and our practice will be all the better if we emulate the energy, ingenuity, and skill for which our transatlantic confrères are so remarkable.

AMBROISE PARÉ AND HIS TIMES, 1510-1590. By STEPHEN
PAGET. (*New York and London: G. P. Putnam's Sons.*
1897. 8vo.)

THE work here mentioned is full of interest, and manifests a thorough familiarity with both the life, work, and personality of Paré; with the habits and manner of his times; and with the contemporary state of Paris. It consists of 304 pages, an ample index, and includes many illustrations. As regards Paré's life, from the beginning of it to the end he had good health. Till he was a man he lived in the country air; and his father and mother were not too poor to give their children decent food and comfort. He was not much concerned at any time of his life with art or literature, or logic or philosophy. He was fond of animals, and had something of an ear for music and a taste for poetry; but he learned no Greek or Latin in his boyhood, was not a student at any university, and cared for no country in the world save France. He thought for himself in surgery. In his methods of work, Ambroise Paré was in some ways like John Hunter. They are separated by two centuries, by all the differences between the Scotsman and the Frenchman, between London in the time of George III., and Paris under the House of Valois: this diversity only emphasises the likeness between the two surgeons. They, both of them, began life in the country; they saw something of war, and wrote on gunshot wounds; they spent the money lavishly when it came; they were great lovers of animals and their ways. Paré loved the collecting of specimens, dissecting them, demonstrating them; though Hunter's magnificent collection is far beyond anything that Paré dreamed of. He hated with all his heart the whole confraternity of beggars. He who loves good reading, but is not a member of Paré's profession, let him take Malgaigne's edition and read the chapters on beggars, the treatise on the plague, and the *Journeys in Diverse Places*.

The conclusion of the whole matter is the hard saying, which yet he did not include in all the good advice which he gives to

"the young surgeon": that character, in the long-run, avails more than circumstances. Ambroise Paré's methods are antiquated, his theories were all wrong, his books are the forgotten treasures of a few great libraries. Our methods, our explanations will also be superseded; our books, many of them, will not even be treasured. He has kept his hold for three centuries on men by force of character, and by that alone.

A MANUAL OF PRACTICAL MEDICAL ELECTRICITY. By DAWSON TURNER, B.A., M.D., F.R.C.P. Ed., M.R.C.P. Lond. Second Edition, with Chapter on Röntgen Rays. (*Baillière, Tindall & Cox.* 1897. 8vo. Pp. 335. 7s. 6d.)

THE author of this manual is a specialist, and truly he magnifies his office. A work on medical electricity must be judged according to the object which the writer has in view. Dr Turner informs us in his preface that the present book is intended to serve as an introduction to the study of electricity in its application to medicine, and that it is expressly meant for those practitioners and students to whom an elementary work, kept as far as possible free from mathematical and physical definitions and formulæ, is a desideratum. We may say at once that it is, in our opinion, both in its scope and method, quite unsuited for students. The mere size of the book would give the student a false idea of the relative importance of the subject; it contains a mass of details relating to electro-physics and electrical apparatus which should properly be learnt in those parts of the curriculum which deal with these subjects; and finally, the various forms of electro-therapeutics are related at a length and with a minuteness which are certainly not justified by the results which they have yielded. The defunct Apostoli treatment occupies many pages. The newly added chapter on X rays is of very doubtful value: the author's answer to his own query, "What is the nature of the X ray radiation?" is

especially disappointing, and conveys no meaning at all. The work is copiously illustrated. For those practitioners who desire to make a speciality of electrical treatment, and who have forgotten much of the physics they learnt in the schools, the work may doubtless prove of service; but we rather think that the elaborate details which are insisted on, and the costly nature of the apparatus recommended, will, in view of the doubtfulness of the results to be looked for, rather tend to discourage the majority of practitioners from undertaking electrical treatment at all.

LOCALISATION OF HEADACHE AND SICK HEADACHE, INDICATING THEIR ORIGIN, PATHOLOGY, AND TREATMENT. By H. BENDE-LACK HEWETSON, *Hon. Ophthal. and Aur. Surg., Leeds General Infirmary.* Pictorially illustrated. (*Simpkin, Marshall & Co.* 1897. *Pp.* 140. *8vo.*)

THIS is largely a reprint of a paper read in 1884, which pointed out the frequent relation between errors of accommodation and headache,—a relation which is at present a matter of common knowledge with every educated practitioner. The more recent additions consist of a short general discussion of the local causes of headache, ophthalmic and otherwise, with copious extracts from the writings of Dr Lauder Brunton. Finally, there is a useful series of really excellent diagrams, designed to illustrate the locality of the pain of headache arising from different causes. As generalisations from an extensive experience, these diagrams are of interest; but the book, as a whole, cannot be said to form any really useful addition to the extensive literature on headache which already exists. The author would have done himself more justice if he had re-written his work from the beginning.

It is a severe test for a scientific paper to undergo, to be published thirteen years after it was written.

AN ACCOUNT OF THE LIFE AND WORKS OF DR ROBERT WATT,
Author of the *Bibliotheca Britannica*. By JAMES FIN-
LAYSON, M.D., Physician to the Glasgow Western Infirmary,
&c. &c. (Pp. 46. London : Smith, Elder & Co.)

DR FINLAYSON is a physician who finds amusement for his leisure hours in the cultivation of literature. The small volume before us is appropriately the record of a life of one who in like manner divided his energies between the active practice of his profession and the study of books. To embalm such a memory is, for Dr Finlayson, a pious duty, and it has been worthily performed.

The life of Dr Watt was singularly interesting. It affords an example of the way in which a man of natural ability may, by industry and perseverance, raise himself into a good position in the intellectual world from most unfavourable surroundings. The birth, parentage, and bringing up of young Watt were all apparently most unpromising for a medical and literary career. His father was a small farmer in Ayrshire. At the age of 6 he was sent to school, and learned to read, write, and count. But his schooling does not seem to have been very thorough, as he says himself, "from the difficulties I had to encounter in every branch of learning afterwards, I think my proficiency at that time must have been very small." At 13 he became a plough-boy, and worked as a labourer, sometimes in the employ of neighbours, sometimes on his father's farm, till the age of 17. During this period he acquired a taste for reading, and records that he read *Pilgrim's Progress* and the *Lives of Scotch Worthies*, —a good beginning. He next moved to Dumfries, and was employed in road-making. Here he saw Burns, "but cannot recollect of (*sic*) having formed any opinion of him, except a confused idea that he was an extraordinary character"—a conclusion by no means remarkable. He, however, read Burns' poems. As he was chiefly employed in driving stones a distance of two or three miles, he occupied himself in reading while on his journeys, and thereby acquired a smattering of many things,

evidently after the fashion of Jude the Obscure. Leaving the road-making, he takes a turn at cabinet-making for a time in Glasgow. Here an acquaintance fired his ambition by an account of the wonders of the University. In 1792, being then about 18 years of age, he began studying Latin and Greek with a private teacher for one hour a day, still continuing with his carpentering. He entered the University in 1793, and obtained a prize for Greek. In 1795 he seems to have migrated to Edinburgh, as we find him enrolled in the Moral and Natural Philosophy classes of that University. His mind was divided between Theology and Physic, for we find him studying anatomy, and at the same time winning a prize for an essay on regeneration. In 1797-98 he spent a year as parochial schoolmaster at Symington, his name meanwhile enrolled as student of Divinity in Edinburgh. At this time he definitely decided in favour of Medicine, finished his studies at Glasgow, and started as a general practitioner in Paisley. In 1810 he moved into Glasgow and began to practise as a physician.

Dr Finlayson gives a succinct account of Watt's medical writings, which for the period were voluminous. The rush into print had not yet begun: the *An Enquiry into the Relative Mortality of the principal Diseases of Children* is still quoted,—chiefly, we regret to notice, by the opponents of vaccination. He was himself a strong advocate of vaccination, but his figures seemed to show that though by its introduction the mortality from smallpox was diminished, the fatality of measles was increased. He seems to have leaned to the idea that smallpox "had the power of modifying and rendering the measles mild; and now that they are in great measure expelled, the measles are gradually coming to occupy the same ground which they formerly did."

The first part of Watt's great work, the *Bibliotheca Britannica, or a General Index to the Literature of Great Britain and Ireland*, was issued to subscribers in 1819, the year of his death. It was completed in 1824. The project had occupied his mind for twenty-six years. The labour involved must have been prodigious. With ample leisure and the wealth of the British Museum and the Bodleian at his disposal, the compilation of this

gigantic work would have made a name for any professed student of literature. When we remember that it was compiled in Glasgow by a practising physician, away from any large collection of works, and with scarcely any assistance, our admiration rises to amazement. The publishers agreed to pay Mrs Watt £2000 for the work, but, owing to the memorable failure of the Constables, no payment was ever received. Beyond the sum specified, Watt seems to have left his family nothing except the precious heritage of a name ennobled by honourable exertion and crowned by a great achievement. He died at the early age of 45.

THE SANITARY INSPECTOR'S HAND-BOOK. By ALBERT TAYLOR.
(London: H. K. Lewis. Second Edition. Price 5s. 396 pages.)

Of small books on Hygiene and Public Health there seems to be no end. The volume now under consideration is, as far as we know, the only one written by a sanitary inspector specifically for sanitary inspectors and others seeking to qualify for these appointments. As such perhaps, therefore, it supplies a want; indeed, the fact of the second edition being called for is evidence that it does. Mr Taylor holds an important position among sanitary inspectors; and not only does he write of matters with which he is intimately acquainted, but he puts what he has to say in clear and concise language.

In a short review it is quite impossible to touch on the many points which might be mentioned, but special praise may be given to the chapters on House Drainage and on Ventilation, both illustrated by numerous drawings.

In the latter chapter, it is refreshingly original to find no reference to Montgolfier's rule and formula. We know, however, from personal experience, how difficult it is to get students with only a very limited knowledge of physics to understand the formula, and perhaps Mr Taylor is wise in leaving it out altogether. Sanitary law, and the methods of enforcing compliance

with it, occupy a very considerable portion of the book. The alphabetical synopsis of the provisions of the Public Health (London) Act, 1891, and the corresponding sections of the Public Health Act, 1875, and its amendments, is for a London inspector especially valuable. We doubt, though, if too much space is not taken up by copies of notices, certificates, portions of inspectors' note-books and registers, all of which may require considerable variation, according to town and circumstance.

As a good practical book of reference on subjects relative to the duties of sanitary inspectors the work may be confidently recommended; but we do not quite agree with the author's statement on page 2, that it is a *text-book* for students preparing for the examinations of the Sanitary Institute. The sanitary inspector is a power in the land; but in order that he may intelligently use that power for his own credit and that of his sanitary authority, we recommend him to read a larger text-book on public health than the one now before us, which should, however, be read concurrently as chiefly treating the practical side of the subject.

EYE STRAIN IN HEALTH AND DISEASE. By AMBROSE L. RANNEY,
A.M., M.D. (*Philadelphia, New York, and Chicago: The
F. A. Davis Company. 1897.*)

THIS noteworthy book is written by a New York physician. It is addressed to oculists and general practitioners, and should be read, as the author requests, without prejudice. It very strongly supports the view, which is held by increasing numbers of medical men on the other side of the Atlantic, that reflex nervous disorders are largely the result of want of balance between the various muscles which move the eyeballs.

For several years past oculists have pointed out that headache, chorea, epilepsy, and other nervous affections may be greatly increased in severity, if not actually caused, by defects in the focus of the eyes; this view is nowadays accepted and acted

upon by most medical practitioners; but it is only in quite recent times, and more particularly in America, that so much stress is laid on the baneful results of defects in ocular balance. Dr Ranney gives due weight to the bad effects of errors of refraction, but lays even more emphasis on the serious reflex nervous disorders which may be caused by want of equilibrium in the external ocular muscles.

To support this view, the present book is written; and cures, which are little short of marvellous, are claimed for the so-called new treatment.

The reader is referred to the book itself for details of these cases; but Dr Ranney states in his preface that many of them were treated for years by most competent physicians, and by various drugs, but without benefit, whereas they have been cured by treatment directed to the eyes alone. In 1888 Dr Ranney published some lectures on 'Nervous Diseases,' which were favourably reviewed in this *Journal* (July 1889, p. 348): he here presented similar views on eye strain as a cause of reflex nervous disorders; he now says that "time has only strengthened the author's early convictions, and many who were antagonistic to his views years ago are now enthusiastic in their support."

The British text-books on eye diseases devote very little attention to ocular balance or its defects: it is true that they refer to insufficiency of convergence of the eyes, and to exceptional cases where prisms or even operative measures may be employed, but it is only in comparatively recent times that Maddox and others have clearly explained the clinical uses for prisms, and have given valuable tests for their accurate use in practice.

Ernest Clarke, in a valuable little book on 'Eye Strain,' refers to the work which is being done in America on this subject of ocular balance, but the standard text-books either do not mention the subject at all, or, as in Swanzy's recent edition, they only refer to it to dismiss it as of no account. Yet, if we may judge from the space and time given to the matter in American journals and at American societies, it is engaging a very considerable amount of attention there.

Stevens of New York has invented a new nomenclature to conveniently describe these various defects in ocular balance, and very valuable and ingenious instruments to detect and measure them, and apparently an increasing number of oculists are following his lead.

It is therefore very necessary that English ophthalmic surgeons, and medical men generally, should be acquainted with the work which is being done on the other side of the Atlantic, and for this purpose the book before us can be strongly recommended.

The first part of the work describes in clear and readable language why these reflex nervous disorders are considered to be caused by imperfect ocular balance, and here great faith is required. The various tests and instruments used for measuring the strength of the eye muscles and discovering their defects are then described with admirable clearness: the greater part of the book, however, consists of illustrative cases of the various affections said to arise from eye strain, and especially that due to want of proper equilibrium in the muscles: from this cause headache, neuralgia, chorea, sleeplessness, chronic gastric and digestive disturbances, epilepsy, nervous prostration, and even insanity are said to result. The latter part of the book gives in detail the operative measures recommended to cure these defects in equilibrium: these consist in the careful division of more or less of the muscle or muscles implicated at the insertion into the sclerotic. It is claimed that no ill effects ever follow if the operation is carefully performed, and that it may be repeated as many times as is desired. Prisms are used to detect weakness in the various muscles, but it is only in exceptional cases that they are employed as a means of cure, for Dr Ranney holds that a graduated or complete tenotomy is the only means of permanently relieving abnormal tension of a muscle in the orbit.

Many readers will no doubt look upon Dr Ranney as an enthusiast, and be unwilling to accept several of his conclusions, but at any rate they should read what he has to say, with an open mind, and recollect that the subject he writes about is

engaging more and more attention abroad, and that he can get very little help or guidance from his text-books at home.

In the experience of the reviewer, most cases of 'eye strain' are quite relieved by the careful correction of errors of refraction, but there are a small proportion of cases where no treatment by glasses gives any relief, though all the symptoms point to the eyes. It may be that if more attention was given to the question of ocular balance, our treatment in many of these cases would be rewarded by success.

THE EDINBURGH MEDICAL JOURNAL Edited by G. A. GIBSON,
M.D., F.R.C.P. Ed. New Series. Vol. II. (*Edinburgh :
Young J. Pentland. 1897.*)

UNDER the editorship of Dr Gibson, the *Edinburgh Medical Journal* has been revivified, and must now be regarded as one of the best medical monthlies. The articles are all of high order, well selected, and from men of repute. We wish the Journal the success which its high standard so richly merits.

A TEXT-BOOK OF PRACTICAL THERAPEUTICS. By HOBART AMORY
HARE, M.D., B.Sc. (*Sixth Edition. Pp. 258. Price 21s.
London : Henry Kimpton. 1897.*)

THIS is a thoroughly practical work on Therapeutics, and is arranged so as to form a companion to his text-book of practical diagnosis. The book is divided into four parts, in the first of which he deals with general therapeutic considerations; the second part is devoted to drugs, and these agents are arranged in alphabetical order, so as to afford a means of ready reference; the third part contains a full account of remedial measures other than drugs, and foods for the sick; in the fourth part, which occupies over 300 pages, there is a well-detailed account

of the treatment of diseases, which are arranged in alphabetical order, and we have enumerated 135 diseases and symptoms of disease thus dealt with. There are tables of dosage, and of relative weights and measures. There is a very complete index of drugs and remedial measures, and another of diseases and remedies.

Dr Hare is well known as one of the best American physicians, and his recent contributions to the literature of Medicine will greatly enhance his already high reputation. We have nothing but praise for this work; and the fact that it has rapidly reached a sixth edition is proof that its merits are widely appreciated. The publisher has executed his task in a highly creditable manner.

THE MEDICAL ANNUAL, 1897. (*Bristol : John Wright & Co.*)

THIS is the general practitioner's *vade mecum*, and everyone should possess a copy. As a handy work of reference, there are few, if any, works which contain so much medical information in so small a space.

SOME POINTS IN THE ANATOMY, PATHOLOGY, AND SURGERY OF INTUSSUSCEPTION. By D'ARCY POWER. (*London : The Rebman Publishing Co.*)

THE substance of this work formed a series of lectures delivered by Mr Power, as Hunterian Professor of Pathology and Surgery, at the Royal College of Surgeons of England, in February 1897.

It is a pamphlet of over eighty pages, and contains a succinct account of the whole subject, illustrated by twenty-seven figures. The first eighteen of these are copies of photographs intended to show alterations in the structure of the injured parts; but they are somewhat hazy and indefinite, which greatly impairs their

value. More than half the volume is taken up with anatomical considerations, including a valuable table of sixty-four cases with many details, arranged at a glance. The work is carefully compiled, and is a valuable epitome of the present state of knowledge on the subject in a readable form, neatly bound and cut, ready for reference.

THE SWEDISH SYSTEM OF PHYSICAL EDUCATION: ITS MEDICAL AND GENERAL ASPECTS. EXPANDED FROM A PAPER READ BEFORE MEMBERS OF THE BRITISH MEDICAL ASSOCIATION. With 27 Illustrations. By THEODORA JOHNSON, *Principal of the Swedish Institute, Clifton.* (Small 8vo. Pp. 80. 3s. 6d. Bristol: John Wright & Co. 1897.)

OF making books on massage and rubbing there is no end, but we are glad to meet with a temperate statement of the value of medical manipulations like the present, from the pen of one who is qualified to speak with the authority which comes from knowledge and experience. Miss Johnson begins with a short historical sketch of the great work of Peter Henrik Ling, who died in 1839, leaving, as his legacy to his country, a system of gymnastics which has become an integral part of its national life, and seems destined to have a beneficial influence on the future of the human race. That the educational exercises, admirably designed to give strength and beauty to the body, will be adopted in our great public schools, where already games and exercises fill up perhaps an undue proportion of the boy's time, is doubtful, but it is certain that they ought to be regularly taught in girls' schools, or carried out at home. Some sort of physical education is at present taught in some of the elementary schools, but it is certainly very inadequate; indeed, a very limited acquaintance with the schools in this city is enough to convince anyone that, with the present accommodation, it would be impossible to carry it out. It can hardly be doubted that if the girls of the working-classes were taught to

exercise their limbs properly in suitable surroundings, they would not become the victims of anaemia, gastric catarrh, and neuralgia when they are called upon to earn their own living, in anything like the extent which they do at present. Miss Johnson is to be congratulated on the way in which she has advocated the Swedish system, and we hope her little book will be largely read by educationalists no less than by medical men. We could wish that she had indulged less in speculations on the influence of movements on circulation and secretion,—speculations which are not always edifying,—and that she had restrained her tendency to use long words. The proper title for one who employs the Swedish system is, it appears, ‘kinesiopathic practitioner.’

JOHN HUNTER. By STEPHEN PAGET. “Masters of Medicine” Series. (*London: T. Fisher Unwin. 1897. Crown 8vo. 3s. 6d. each.*)

THIS is one of the best biographies we happen to have seen.

The life of John Hunter is given in nine chapters, covering some 260 pages. There is an introduction by Sir James Paget, and the work itself is written by his son in that thorough, careful, and appreciative way that characterises all his productions. The life before us is intended for all readers, and is therefore not couched in the technicalities of medicine, neither does it commit “the opposite folly of giving a trivial or gossiping account of John Hunter.”

Much valuable information has been derived from Miss Baillie, a descendant of John Hunter’s sister, and the present owner of Long Calderwood, in Ayrshire, the old home of the Hunters.

This memoir contains an account of John Hunter’s early life in Scotland; his first work in London as assistant to his brother William in their School of Anatomy; his own great work when living in Golden Square, in Earl’s Court, in Jermyn Street, and

in Leicester Square; and there is an interesting chapter on Hunter and Jenner. The information conveyed by Miss Baillie was presented by her to the College of Surgeons in the form of the Baillie Manuscripts, documents of the highest value, full of facts about Hunter.

Mrs John Hunter was an interesting woman, of cultivated tastes and much refinement. It may not be generally remembered that she was the author of "My mother bids me bind my hair," the well known and favourite song, of which the beautiful music was composed by Haydn; and that she also wrote the words to Haydn's "Creation."

For the rest, we can only refer the reader to the book itself, which is a credit to the author, to the publishers of this very cheap series, and to their editor, Mr Ernest Hart.

A SYSTEM OF PRACTICAL MEDICINE. By American Authors.

Edited by ALFRED LEE LOOMIS, M.D., LLD., *late Professor of Pathology and Practical Medicine in the New York University*, and WILLIAM GILMAN THOMPSON, M.D., *Professor of Materia Medica, Therapeutics, and Clinical Medicine in the New York University*. Vol. I. Infectious Diseases. (Price 25s. net per volume, or £5 complete work. London: Henry Kimpton. 1897.)

THIS, so far as one can judge from a perusal of the first of four large volumes, would seem to be a thoroughly representative work of the best American thought in medicine. Anyhow, we have been much pleased with the present volume; and the names of the distinguished authors whose writings will follow should be a sufficient guarantee that the whole work will be well up to date, and will clearly express the opinions and practice of many of the best physicians in America.

The death of the senior editor soon after the inception of the work might give rise to some doubt as to its value, but the foundation was so well laid by him, and the super-

structure so diligently supervised by his co-editor, that the importance of the work has not been materially damaged by the loss of the master-hand. We have always had such a very high opinion of the late Dr Loomis that we take this opportunity of endorsing the following statement in the preface:—"He was one of the world's great masters of medicine; he leaves it richer for this result of his knowledge of the science, and of his contemporaries who could fitly join him in expounding it. His own article on Endocarditis will be read with all the interest attaching to the latest production of a man universally admired for his attainments and respected for his personality."

The subject of Malaria occupies 154 pages, and, as might be expected, is admirably handled by Drs Welch and Thayer. Of recent years there has been a tendency, chiefly on the part of inexperienced writers, to ascribe hepatic cirrhosis, on the authority of Cantani, to malarial infection. On this point the present authors have arrived at the following carefully expressed conclusion:—"It may be said that secondary sclerotic processes, in greater or less degree, in the liver, spleen, and bone marrow, are not uncommon after repeated malarial infections. The question of the possibility of the development of a *true atrophic cirrhosis* of the liver, of malarial origin, is not settled; the development has never been actually traced, and the condition, if it exist at all, is probably rare. The possibility of its occurrence cannot, however, be denied."

Enteric or typhoid fever, from the pen of Dr J. C. Wilson, occupies 65 pages, may be described as a fair resumé of general knowledge of the subject, but is utterly devoid of originality. We have previously read some of the writings of this author, and our expectations have not been great, but we were scarcely prepared for such an absence of historical knowledge of the subject, and the omission of any mention of Widal's reaction in a work published in 1897 is most reprehensible. When speaking of prophylactic and curative inoculations he makes no reference to Dr Wright of Netley. He gives three illustrations from Charcot; and when describing the anatomical change in the intestine he more or less adopts the stages of Troussseau,

but he does not once mention the name of that distinguished Frenchman. The only justification that we can find for entrusting this important subject to such a self-constituted authority may be found in the fact that he is a rather *warm* advocate of Brand's cold-water treatment.

The article on Yellow Fever by Dr Sternberg, and that on Cholera by the late Dr Byron, are carefully written, and will well repay perusal, as the work of men who had considerable experience of those diseases. Dr Byron strongly recommends hypodermoclysis and enteroclysis in the treatment of cholera. Some years ago Dr Barr of this city suggested that the patients should be treated in a continuous warm bath, somewhat similar to his method of treating typhoid fever, but at a higher temperature. By this means he would hope to prevent the dehydration of the blood and tissues, and obviate the stage of collapse. Under these conditions enteroclysis and other treatment could be easily carried out. We now recall this suggestion, as the probability of Dr Barr having an opportunity of putting his views into practice in an epidemic of cholera in this city is rather remote.

The chapter on Dysentery, by Dr Hamilton A. West, meets with our commendation.

Influenza, by Dr James C. Wilson, occupies 25 pages, and is an admirable article on this subject. He gives a good historical account of the disease, while his description of the symptoms is vivid, and his treatment sound. We are very pleased to be able to speak highly of this chapter, as we have passed some disparaging remarks on the same writer's contribution on enteric fever.

The article on Erysipelas, by Dr George Dock, is well up to date, and he gives the source of his references,—an example which might have been followed with advantage by many of the other writers. In fact, *bibliography* is sadly lacking in the majority of the articles.

The chapters on Smallpox and Vaccination are from the pen of Dr Welch, and are worthy of that distinguished authority.

There is an admirable chapter on Diphtheria, by Dr W. H.

Park. He gives elaborate statistics in the use of diphtheria antitoxin, and concludes that it "has a marked curative effect in diphtheria. The results are very striking when the injections are used early in the disease, and when the diphtheria is uncomplicated with pneumonia or sepsis. In well developed cases and in those having complications its benefit is less marked. In cases already profoundly under the influence of the diphtheria toxin and in a dying condition it is useless."

In order to emphasise the high character of the article on tuberculosis, it is sufficient to say that it has been written by Dr Osler. There are also chapters on dengue, typhus fever, relapsing fever, the plague, epidemic cerebro-spinal meningitis, pyæmia, septicæmia, scarlet fever, measles, rubella, pertussis, epidemic parotiditis, syphilis, leprosy, tetanus, and infectious fevers of an obscure nature.

The printing, type, and general get-up of the work reflect high credit on the publisher.

THE DISEASES OF WOMEN: A HAND-BOOK FOR STUDENTS AND PRACTITIONERS. By J. BLAND SUTTON, F.R.C.S. Eng., *Surgeon to the Chelsea Hospital for Women*; and ARTHUR E. GILES, M.D., B.Sc. Lond., F.R.C.S. Edin., *Assistant Surgeon to the Chelsea Hospital for Women*. (London: The Rebman Publishing Co. Ltd., 11 Adam Street, Strand.)

THE volume before us is written for the instruction of practitioners and students in the art and science of Gynaecology. It opens with a clear and concise description of the anatomy and general physiology of the genital system. The methods of conducting physical examinations of the female pelvic organs are lucidly placed before the reader. We notice the authors deprecate the use of *tents* for the purpose of dilating the cervix uteri, as being "tedious and often unsafe," and their recommendation of dilatation at one sitting. We are in entire agreement with them on this matter. We also agree with their views as to

the propriety and utility of examining unmarried and nulliparous women under the influence of an anaesthetic. The chapters treating of the development and malformations of the genitalia are written in a graphic style, and the illustrations explanatory of the text are excellent. The complications resulting from such malformations, their symptoms, diagnosis, and indications for treatment, are clearly defined, and up to date. We can scarcely subscribe to the statement that in extreme cases of varicosity of the labial veins, induction of premature delivery should be effected. The other diseases comprised in the section of the work on vulvar affections are admirably explained, and the lines of treatment proposed sound and practical. The diseases, injuries, and displacements of the vagina come next in order, and they are all dealt with in a clear and forcible manner. A notable feature in this part of the book is the excellent resumé of the bacteriology of the normal and pathological secretions of the vaginal canal. The various micro-organisms are contrasted, and illustrated by excellent micro-photographs. The diseases of the uterus receive a fair share of attention. Flexions and displacements are considered first. In the treatment of autoflexion, we notice that vaginal pessaries are condemned as being "absolutely useless," and two procedures are advised—(a) dilatation of the cervical canal, and (b) plastic operation. In our experience, both these procedures give very unsatisfactory, remote results, relief being only fugitive, and the patients returning in the course of a few months with all their former sufferings. Retro-displacements are fully described, illustrated by diagrams, and the indications for treatment are sound and practical. The mechanism of prolapse, procidentia, and hypertrophic elongation of the cervix are carefully explained, the illustrations exemplifying the latter affection being particularly good. The only pessaries figured, and advised for use in actual practice, are the Hodge, ring, disc-and-stem, and Aveling's repositor for inversion. The pathological conditions affecting the endometrium are fully described and tabulated, and we notice that tuberculosis has a prominent place on the list. The authors aver that this disease is not so uncommon as is generally supposed.

It is usually associated with tubercular lesions in the lungs and bones, spreads by Fallopian tubes, and infects the peritoneum. It is not often diagnosed during life. The various kinds of uterine myomata are fully described, and delineated by excellent specimens. The differential diagnosis of myomata is minutely entered upon, and the indications for treatment are—(1) oophorectomy, (2) myomectomy, and (3) hysterectomy. It is interesting to notice the entire absence of any mention of Apostoli and his electrical treatment, which was so much lauded a few years ago. The group of malignant neoplasms attacking the endometrium—comprising sarcoma, adenoma, and carcinoma—are elaborately described, and beautifully portrayed by microscopic and naked-eye illustrations. The authors maintain that the obscure and much-debated disease, malignant deciduoma, bears no inherent relationship to conception, but is essentially a sarcoma which may, and sometimes does, attack the uterus of nulliparous women. The treatment advocated for all kinds of cancer is total extirpation. The authors do not tell us, however, what the *remote* result of this treatment may be. We are convinced that the surgical treatment of cancer is a miserable failure, and tends to discredit the surgeon and his art. In the chapters devoted to diseases of the Fallopian tubes, we have a concise and clear exposition of the pathological conditions found affecting these structures. The subject-matter is well arranged, and the illustrations are capital. It is stated that most examples of tubercular salpingitis are secondary to tuberculosis of the endometrium. The diagnosis of the various forms of salpingitis is well handled, and the indications for treatment sound and practical. When we turn to the important subject of tubal pregnancy, we observe the master hand of Bland Sutton. Contrary to the teaching of Lawson Tait, that the causation of ectopic gestation is chronic salpingitis, and consequent desquamation of tubal epithelium, the investigations of Bland Sutton show that "a healthy Fallopian tube is more likely to become gravid than one which has been inflamed." This is a startling pronouncement, and needs much further confirmation. The various stages and results of tubal pregnancy are clearly and fully laid before the

reader. One fact strikes us as remarkable, namely, that our oldfashioned notions as to the causation of so-called pelvic haematocele must be considerably modified. The authors affirm that in all instances the real cause is due to the products of conception, and that the term *pelvic haematocele per se* should be expunged from our nosology. The differential diagnosis and treatment of this formidable accident are cogent and reliable. The section which deals with diseases of the ovaries is fully on a par in point of excellence with the rest of the work. The pathology of ovarian new growths is skilfully handled, and each kind illustrated by capital drawings. The symptoms, differential diagnosis, and indications for treatment are discussed in a most comprehensive manner, thoroughly practical and up to date. Septic infection of the pelvic peritoneum and connective tissue is ably dealt with. The authors advise opening pelvic abscess through the belly-wall, rather than by incising through the vagina. Disorders of menstruation, vaginismus, dyspareunia, and sterility are all described in a comprehensive manner, and includes everything the student should know about them. It would seem to us, if the chapters on diagnosis had been placed at the beginning of the book, preceding chapter iii., instead of at the end, it would have been more in sequence, conduced more to the convenience, and less to the confusion, of the student. The volume closes with an admirable exposition of the technique of all gynaecological operations, elucidated largely by drawings of the various steps and appliances required in the performance of each operation.

The book is well indexed, the type is good, but the binding *shoddy*. We have perused this hand-book with pleasure and profit. We feel sure it has a lasting future before it, and we can confidently recommend it to the student and junior practitioner as a very readable and trustworthy guide to the important branch of medicine of which it treats.

WHAT TO DO IN CASES OF POISONING. By WM. MURRELL, M.D., F.R.C.P. (*Eighth Edition. Pp. 290. Roy. 32mo. 3s. 6d. London: H. K. Lewis.*)

IT is unnecessary to review the eighth edition of Dr Murrell's most useful little hand-book. Suffice it to say that it has been thoroughly revised, the latest methods of treatment have been introduced, and new poisons included. We cordially recommend the book to the notice of every medical man liable to be called to treat cases of poisoning.

MANUAL OF BACTERIOLOGY. By ROBERT MUIR, M.D., and JAMES RITCHIE, M.D. (*Pp. 519. Crown 8vo. Edinburgh and London: Young J. Pentland.*)

THIS manual of bacteriology contains a full and concise account of all the pathogenic bacteria. The first part of the book is devoted to the consideration of general bacteriology, methods of culture, of staining, etc. One chapter is devoted to fungi; the various pathogenic bacteria are then described, and there are chapters on toxines and immunity. We consider this book the best text-book at present published for candidates preparing themselves for any examination for the diploma in Public Health.

It would also be invaluable to any one wishful to make himself thoroughly conversant with modern bacteriological research, and with the various methods of inoculation. The chapter on Immunity is especially good. The various ways in which immunity may be acquired are described and discussed. It seems to us that the two theories generally accepted now—the humoral theory and the phagocytosis theory—are really mutually supplementary, and that unnecessary difficulties have been raised in the discussion of immunity. The humoral view implies an increased bactericidal action on the part of the fluids of the

body, and the phagocytosis theory supposes an increased functional activity on the part of certain cells—the phagocytes. The two theories are probably true—both involving a profound tissue-change—for the composition of the fluids of the body depends upon cellular activity. Hence the humoral theory presupposes a cell-change, and a considerable amount of evidence has been gathered tending to show that leucocytes are responsible for the production of bactericidal substances found in the fluids of the body. It is therefore of little moment whether we believe that the invading pathogenic bacterium is first paralysed by the bactericidal substances in the blood and then ingested by leucocytes, or whether the leucocytes themselves ingest the living bacterium. Both theories depend upon the action of leucocytes. Anti-sera act similarly in two ways—either they are anti-toxic, neutralising the bacterial toxine, or are anti-microbic, paralysing and killing the invading organism. The particular serum may act in both ways or only in one. For a full account of the discussion we refer our readers to the Manual.

We may add that it is well printed, well illustrated with micro-photographs, it has a good index and a full bibliography.

HYGIENE AND PUBLIC HEALTH. By LOUIS C. PARKES, M.D.
(*Fifth Edition. Pp. 570. Cr. 8vo. 10s. 6d. London: H. K. Lewis.*)

THE widespread study of public health is evidenced not only by the publication of numerous new text-books dealing with general hygiene and with special departments, but also by the rapid issue of new editions of works already approved. We welcome the appearance of a fifth edition—revised, and to some extent enlarged—of the well-known text-book of Hygiene and Public Health written by Dr Louis Parkes. It is unnecessary to review this book at any length. Suffice it to say that it is interesting and readable, accurate, practical and up-to-date, and

that it gives a full account of our present knowledge of sanitation. We commend it to the notice of Public Health students, as well as to the general practitioner who needs a handy reliable work of reference.

COMPRESSION AIR ILLNESS. By E. HUGH SNELL, M.D., B.Sc.
(Pp. 252. Demy 8vo. 10s. 6d. London: H. K. Lewis.)

THIS book contains a critical account of the literature of the so-called Caisson disease. Dr Snell had medical charge of the workmen engaged in the construction of the Blackwall Tunnel, and had opportunity of observing more than 200 cases of illness ascribed to the effects of compressed air. The chief cause of illness is decompression. On entering into the compressed air chamber, the effect is obviously mechanical in origin, due to a difference of pressure on the two sides of the tympanic membrane, or to some obstruction to the free entrance of air into the frontal sinuses. Earache, of varying intensity, generally results. The tympanic membrane may be ruptured or may become congested, and even inflamed. Suppuration rarely occurs. Hearing may be affected, temporarily or permanently. There is no ear-pain on exit. There are no symptoms during the stay in the compressed air chamber, but ill effect is observed during or after decompression. Most commonly pain, sharp or dull, is experienced in the extremities, usually in the legs, in the region of the knees. Its onset is sudden, it varies in intensity, there is tenderness of the part, but no objective signs. It persists from one hour to several days. Epigastric pain occurs occasionally, either alone or associated with pain in the limbs, and may give rise to nausea or vomiting. Temporary paraplegia is of rare occurrence, but has been observed. The bladder and rectum are involved. Vertigo, epistaxis, and haemoptysis have been occasionally noticed.

Prognosis is good, recovery generally taking place in six weeks. The intensity of the illness depends upon the pressure.

Length of stay in the compressed air chamber has no influence, but bad ventilation and irregular habits are definite predisposing causes of the illness. The explanation of the disease has been sought in carbonic acid poisoning, in the mechanical congestion of various viscera, and in the increased solution of gases in the blood, together with their subsequent rapid liberation. After a full discussion of these various theories, Dr Snell inclines to the last named. Preventive treatment consists in slow decompression, and curative treatment in recompression. A full bibliography of the literature of the Caisson disease is included, making reference easy for those who wish to study the physiological, therapeutical, or pathological effects of compressed air. Dr Snell's work will prove useful to any medical man taking charge of public works in which compressed air is used.

THE DISORDERS OF DIGESTION IN INFANCY AND CHILDHOOD. By

W. SOLTAU FENWICK, M.D., *Physician to the Evelina Hospital for Sick Children.* [The second of a series of Monographs upon Diseases of the Stomach.] (London: H. K. Lewis. 1897. Pp. 369.)

A SERIES of monographs on diseases of the stomach seems to indicate formidable designs on the part of an editor or publisher, and the contemplation of such an enterprise is calculated to raise apprehensions in one's mind lest quantity should take precedence to quality. These fears, we must honestly confess, are not entirely dispelled by the perusal of the work before us, in which a diffuseness of style, unnecessary subdivisions of the subject, and needless repetitions diminish interest in a work which has nevertheless much to commend it.

Dr Soltau Fenwick's special qualifications for the task he has undertaken are, that he is a physician in the Evelina Hospital, that he has taken "notes of some five thousand cases of disordered digestion," and that as a Research Scholar of the British Medical Association he was able to carry out some very im-

portant pathological work bearing upon this subject. While the chapters on the anatomy and physiology of the organs concerned, on the feeding of infants, and on the clinical phenomena of disordered digestion are good, we have derived much more satisfaction from reading the sections devoted to pathological changes in the stomach and intestine, such portions embodying, as they do, the original work of our author. These chapters, together with a catalogue of recorded cases of ulceration of the stomach, and a brief but excellent reference to dyspepsia in Bright's disease, form a valuable contribution from Dr Fenwick to the advance of medicine, and, in our opinion, would more speedily and certainly secure the attention and appreciation which they deserve if they had not been overladen with so much commonplace matter.

“**INTESTINAL INTOXICATION IN INFANTS.**” By F. W. FORBES ROSS,
M.D., *Clinical Assistant, Children’s Hospital, Paddington Green, London, W.* (London: The Rebman Publishing Company (Ltd.). 1897.)

DR ROSS describes this little work as an attempt to systematise treatment of functional derangement of the infantile alimentary canal, due to septic or other causes, by rational combination of bactericidal with other therapeutic methods. Apparently, what we have before us is the enlargement of a thesis which Dr Ross wrote for the degree of M.D. in 1893.

As a thesis on the subject it had its value, but the necessity for its publication is less apparent. A great part is taken up with theorising on the pathology of diarrhoea, constipation, and kindred disorders of the digestive system. Experiments which Dr Ross undertook to prove some of his theories are referred to; but as the exact data are not given, the reader cannot judge of the value of his conclusions.

The same may be said of the more practical matter in this book. Many dogmatic statements are made, and illustrated by

reference to particular cases; but as the exact details are not given, the statements have to be taken for what they are worth.

Dr Ross's literary style is not to be commended. His language is often obscure, and his sentences involved. It is a mistake to suppose that a truth is impressed on the mind by being clothed in words of many syllables. Oh for a modern Sir Thomas Watson or Charles West!

There are, however, in this work many points worthy of praise. There is evidence of Dr Ross having carefully studied and read up the subject of infantile intestinal disorders and their treatment.

Many of his suggestions for the treatment of these are distinctly valuable.

ARCHIVES OF THE ROENTGEN RAYS (formerly **ARCHIVES OF SKIAGRAPHY**). Edited by W. S. HEDLEY, M.D., and SIDNEY ROWLAND, M.A. (*London: The Rebman Publishing Co. (Ltd.)*).

THE first number of this work, published in July 1897, is a continuation of the "Archives of Skiagraphy." It is somewhat modified in form and considerably enlarged, whilst added to the numerous illustrations is a considerable amount of letterpress. The publication in its new form will consist mainly of the transactions of the new Roentgen Ray Society, and will be issued in quarterly numbers; it is under the direction of two editors and an editorial committee.

In the July number we note an article on nature of the X rays by Silvanus P. Thompson, summing up the three theories which are at present put forward to account for the various manifestations produced by these rays. None of these are proved. The latest is the ultra-corpuscular theory, started by Tesla; and the idea that atoms can be broken up into "dust," which is capable of penetrating in straight lines through the pores of solid bodies, is startling.

Following this article is another by W. S. Hedley, which is a

survey of the subject down to the present time. From this article it is obvious that up to now the most useful work has been done in connection with bone surgery, and in the detection of foreign bodies. Medicine has profited to a very considerably less degree, and the work recorded in this line cannot be said to have been very successful.

Some attempts have been made to make use of the X rays therapeutically, but so far, practically speaking, with no success.

In addition to these articles are a number of well executed plates, illustrating the practical uses of X rays, a short description of each plate accompanying it.

Undoubtedly the most marvellous radiograph yet taken is that of the "entire body at one exposure," by W. J. Morton, M.D., of New York. Other illustrations show a fractured olecranon treated with a steel screw; two chests, one that of a child suffering from phthisis, the other that of an adult with a doubtful aneurism; a case of vesical calculus, and a congenital dislocation of the hip in a child. These are all good samples of the work which is now being accomplished. We have seen some of the original radiographs, and congratulate the publishers on the way in which they are here reproduced.

The Archives is certainly a journal we can heartily recommend to all interested in X ray work.

A PRACTICAL TEXT-BOOK OF THE DISEASES OF WOMEN. By A. H. N. LEWERS, M.D. (*Fifth Edition. London: H. K. Lewis. 1897.*)

THIS is the fifth edition of one of the Lewis Practical Series, and is considerably increased in size. We have had the pleasure of reviewing the former editions, and we can repeat the commendations before expressed.

A text-book, to be worthy of the name, should have its contents well arranged and easily accessible by a good index, and in these respects Dr Lewers is to be congratulated. In

addition, the author's views are expressed clearly, but not dogmatically, while the avoidance of alternative treatments and opposing pathological views makes the volume invaluable to the practical man.

The chapter on uterine fibroids is a very good one, but in it we find no reference to Dr Alexander's multiple enucleation after abdominal section, an operation which has been very successful. Dr Martin (1891) is quoted as showing this proceeding to have a very high mortality (from 15 to 25 per cent.), so that we may take it that the method of operation has been improved if not originated by the former.

Pelvic haematocele is considered with ectopic gestation, while the possibility of other causes is not denied.

New coloured plates are given, illustrating Tait's perineorraphy, and we trust that for once its author will consider the description correct.

This book is nicely printed, convenient in size, and, all round, a useful one.

A HANDBOOK OF THERAPEUTICS. By SIDNEY RINGER, M.D., F.R.S., and HARRINGTON SAINSBURY, M.D., F.R.C.P. (*Thirteenth Edition.* 1897. *H. K. Lewis.* Pp. 746. 8vo.)

We welcome a new edition of this familiar work, which still remains one of the most useful, alike to advanced student and practitioner. Of the plan of the work little need be said, as it is the same as in former editions, but several fresh articles have been added, so as to include the more recent additions to the *materia medica* and the methods of treatment which have lately come into vogue. The article on serum therapeutics is excellent. It is cautious in tone, but recognises the undoubted value of the practice in diphtheria and snakebite, not to speak of myxœdema, and does not deny that it may yet prove of benefit in other conditions in which it is still on its trial. The method of employing it is fully described. The article on the Nauheim-Schott treatment is unsatisfactory, in so far that the authors do

not commit themselves to any distinct opinion as to its efficacy. They repudiate the belief in the sensational effects which were at one time claimed for it, but are of opinion that it may find its place *more or less* in most cases.

The admirable introduction on symptoms as a guide to prognosis and treatment ought to be studied by every practitioner. It is an admirable corrective for the modern tendency to attend to physical signs and laboratory results, to the exclusion of those finer indications which tell so much to the physician who has learnt by experience to understand their significance. The remarks on the use of the thermometer in phthisis strike us as being rather old-fashioned. The problems to which the thermometer formerly gave a somewhat doubtful solution can now often be decided conclusively by a bacteriological examination of the sputum.

RINGWORM AND ALOPECIA AREATA. By H. ALDERSMITH, B.M.
Lond., F.R.C.S. (*Fourth Edition, enlarged and rewritten.*
London: H. K. Lewis.)

THOSE who are only familiar with Dr Aldersmith's original little book on Ringworm, published seventeen years ago, cannot peruse the present volume without surprise and pleasure: with surprise, because the old notions regarding the etiology and pathology of ringworm have passed away with other derelicts of imperfect knowledge and crude hypothesis; with pleasure, because the fuller light affords greater facilities of diagnosis, with improvements in methods of treatment.

The volume before us is eminently suited to the needs of the general practitioner. Its aims are practical, for out of the total number of 313 pages, 132 are devoted to the subject of treatment, and 36 to the question of diagnosis. The remaining 145 pages are devoted to the consideration of the biology of the Trichophyta, and to the recent researches bearing on the pathology of Alopecia areata.

The chapter on the biology of the trichophytic fungi is well up to date. The author has spared no pains to make himself

fully acquainted with the researches of the last ten years. He accepts the modern doctrine that the tineas are produced by a family of fungi, and not by one, unique, organism. We are bound to confess, however, that this portion of the book bears much of the aspect of "knowledge in the making"; much of the present scaffolding and debris will no doubt be removed in a future edition.

The section dealing with the clinical aspects of ringworm contain much of value to the practitioner. Statistical information is afforded on the commonest age for ringworm, the percentages of the disease among children in Christ's Hospital and other schools, and on the relative frequency of the different forms of the disease.

The description of the microscopical appearance of the invaded hairs is accurate and minute; perhaps a little too formal, now and again running even into finesse; but in this the author only follows the precedent of the present-day workers. In following the life-history of the parasitic fungi within the invaded host, it is so easy to miss the fine essence of that life, and to be carried away by its grosser and accidental features.

The present text-book has the honour of being the first of such books in the English language to describe the different clinical aspects of the several kinds of *Tinea tonsurans*. This marks a new milestone of progress, for which we are indebted to a technically inspired Frenchman.

Very valuable to the general practitioner is the chapter dealing with the diagnosis of ringworm. The author treats not only of the signs whereby the disease can be recognised in full activity, but of the tokens and indications of cure. That the question is by no means so easy as it appears, is proved by the large number of examples of uncured cases which are certified as 'cured.' No one is better entitled to discuss the subject than Dr Aldersmith, and we are pleased to find that he enters fully into the matter of the writing of certificates. We can cordially recommend the practitioner who feels in need of enlightenment to the careful study of these pages.

In respect of treatment, the author opens a spacious and well-

filled arsenal to the distressed physician; and, what is vastly more important, he interprets, with his wide experience and excellent good sense, every prescription and remedy which this arsenal affords. These 132 pages are the best in the book, and the profession is indebted to Dr Aldersmith for writing them. Special prominence is given to the croton-oil treatment. This treatment, which has been strongly advocated by the author for twenty-three years, is based on the observation that when suppuration is naturally induced in the invaded follicle, the fungus is killed, and the diseased hair extruded. In the hands of the expert, in selected cases, it is an exceedingly useful form of treatment, but is apt to produce acute inflammation, with permanent alopecia, if not carefully and skilfully handled. Full and detailed directions are given for its use.

A special chapter is devoted to the subject of alopecia areata. The question of the causation of this striking form of disease is still in the crucible, but recently large additions have been made to our stock of knowledge on the subject. The author has not yet accepted the opinions of Sabouraud as to the alleged parasitic origin of the disease, and he refuses to admit that bald ringworm is true alopecia areata. Much confusion in this discussion might be avoided by remembering that 'alopecia' is merely *deflurium capillorum*, a mere symptom, a common terminus of different pathological processes. As we have said in another place, there is presumptive evidence for believing that the agents which inhibit or arrest the growth of hair may reach the pilogenic papillæ through three sources—the blood, the nerves, and the vehicle of a micro-organism penetrating the epithelium, and having its origin in the external world.

Art has contributed valuable aid to Dr Aldersmith's book. The text is embellished with seven plates, all excellently executed from the author's own drawings, and photographed on to stone. The drawings themselves are a faithful copy of nature. As to the typography and general setting of the book, it is all that we would expect from our previous acquaintance of the works which have issued from the firm of Mr H. K. Lewis, of London.

A BOOK OF DETACHABLE DIET-LISTS FOR ALBUMINURIA, ANÆMIA AND DEBILITY, CONSTIPATION, DIABETES, DIARRHœA, DYSPEPSIA, FEVERS, GOUT OR URIC ACID DIATHESIS, OBESITY AND TUBERCULOSIS, AND A SICKROOM DIETARY. Compiled by JEROME B. THOMAS, A.B., M.D. (*Philadelphia: W. B. Saunders. 1895. \$1.50.*)

THESE lists are likely to prove very useful to the busy practitioner, who can often but ill spare time for writing out dietaries for all his cases. It is naturally the aim of the physician to allow his patient as much latitude in diet as is consistent with his well-being, and Dr Thomas's lists do not err on the side of exclusiveness. It is intended, of course, that those articles of diet which are unsuitable for the individual case should be erased. The sickroom dietary-sheets are very concise and complete.

SPINAL CARIES. By NOBLE SMITH, F.R.C.S. Ed., L.R.C.P. Lond., *Surgeon to the City Orthopaedic Hospital, Surgeon to All Saints Children's Hospital, &c. (Second Edition. Smith, Elder, & Co.)*

THE subject of Spinal Caries is dealt with in this work in a most practical manner. The early and frequently obscure symptoms of the disease are carefully described, and, as the author rightly points out, success in treatment very largely depends upon the early diagnosis and upon the accurate support of the spine. A splint devised by the author, and called the "adaptable metal splint," is naturally recommended as the most generally useful form of spinal support. The greater part of the book is devoted to the consideration of the treatment of Pott's disease, which is dealt with in every detail.

After reading this book, the impression left upon our mind is

that it has been written by a man who has had a large practical experience of the subject, and this monograph consequently forms a valuable addition to the literature of spinal caries.

CONVERGENT STRABISMUS AND ITS TREATMENT: AN ESSAY. By EDWIN HOLTHOUSE, M.A., F.R.C.S., Surgeon to the Western Ophthalmic Hospital. (*London: J. & A. Churchill, 7 Gt. Marlborough Street.*)

THIS volume is the fruit of the author's investigation of the interesting and still obscure phenomena of convergent squint, and is based upon an examination of some 140 uncomplicated cases of the deformity. These cases were examined from various points of view, and as a result the essay bristles with tables and figures, all more or less interesting to the specialist, and intended to throw light upon various points which are still the subject of discussion and difference of opinion, both as regards etiology and treatment. In our opinion the work is a very thorough and unbiased investigation of the subject, and well worthy of careful perusal on the part of ophthalmic surgeons generally, whether or not they may be able to agree with the author in the explanations and conclusions which he draws from the facts which he has tabulated. On the whole, we think there is to be noticed in this, like other recent publications on the same subject, a tendency to undermine the time-honoured hypermetropic theory of the production of convergent squint. For example, in discussing the subject of amblyopia of squinting eyes, the author says that "it is possible to overestimate the part which hypermetropia plays in the development of convergent strabismus"; and again, on the subject of alternating strabismus, "no explanation of convergent strabismus will suffice that does not account for the alternating variety thereof." We might suggest that a satisfactory explanation of the alternating variety might be equally so as regards the monocular variety also, for we cannot help thinking that practically all varieties of squint are the same

in their essence. Be that as it may, the author admits that hypermetropia will not account for the most uncomplicated of the varieties of squint—that in which both eyes are practically equal in refraction and vision. On the subject of treatment, the author, with we think some apparent inconsistency, insists upon the use of glasses in nearly all cases, at least at the beginning of treatment; and when, after the failure of glasses, operation has to be undertaken, he favours the more frequent use of advancement either in combination with tenotomy or alone as advocated by Landolt.

PRACTICAL DIAGNOSIS : THE USE OF SYMPTOMS IN THE DIAGNOSIS OF DISEASE. Second Edition, Revised and Enlarged. By HOBART AMORY HARE, M.D., B.Sc. Illustrated with 201 Engravings and 13 Coloured Plates. (*Price 21s. net.* London : Henry Kimpton. 1897.)

We have not space to give a full review of this valuable work; perhaps, therefore, a lengthy quotation from the author's preface will give our readers a better idea of the scope of the book than would be attained by any short notice.

"The object of this volume is to place before the physician and student the subject of medical diagnosis as it is met at the bedside. To accomplish this, the symptoms used in diagnosis are discussed first, and their application to determine the character of the disease follows. Thus, instead of describing locomotor ataxia or myelitis, these will be found in the chapter on the feet and legs, a discussion of the various forms of and causes of paraplegia, so that a physician who is consulted by a paraplegic patient can in a few moments find the various causes of this condition, and the differential diagnosis between each. So, in the chapter on the tongue, its appearance in disease, both local and remote, is discussed. In other words, this book is written upon a plan quite the reverse of that commonly followed; for in the ordinary treatises on diagnosis, the physician

is forced to make a supposititious diagnosis, and, having done this, turn to his reference-book, and read the article dealing with the disease supposed to be present, when, if the description fails to coincide with the symptoms of his case, he must make another guess, and read another article.

"In this book, however, the discovery of any marked symptoms will lead directly to the diagnosis. Thus, if the patient is vomiting, in the chapter on vomiting will be found its various causes and its diagnostic significance, and the differentiation of each form of this affection from another."

A perusal of the work has satisfied us that the author has admirably fulfilled the task which he set himself to perform. We can cordially commend the book to teachers, practitioners, and students.

ANEURYSMS OF THE AORTA : BEING AN EXERCISE FOR AN ACT FOR THE DEGREE OF M.D. IN THE UNIVERSITY OF CAMBRIDGE. By OSWALD A. BROWNE, M.A., M.D. (*London: H. K. Lewis.* 1897.)

We give the title of this work in full, as an example of the most recent Cambridge style of supplanting the old term 'thesis.' This work is the result of a very careful analysis of 173 cases of aneurysm of the aorta which occurred in St Bartholomew's Hospital during the last thirty years. The statistical method is very well employed, and his deductions therefrom are on no point strained, but it is scarcely necessary for him, by way of qualification of his inferences, to adopt the following quotation from the late Sir J. Russell Reynolds, Bart., F.R.S.:—"By statistical information we may point out the direction in which truth lies, and *may approximate an accurate statement of certain facts*; by percentages we may eliminate errors, and convey some fraction of its truth; but the truth itself, the principle or law, cannot be converted into figures; it lies beyond them, is *an inference from them*, and is subject to no exceptions and no change." This high-sounding jargon may be well suited for

a President of the College of Physicians, but it is scarcely what we would have expected from an F.R.S. Some men are supposed not to be able to speak the truth even by accident, but we should have hoped that, when errors were eliminated, something more than a fraction of truth might remain. It is a matter of general observation that 2 and 2 make 4, but it seems that truth does not lie in such a material fact, but is merely an inference therefrom. We are quite willing to accept Dr Browne's facts and figures, and will in no way question their accuracy, and we can assure our readers that a perusal of this thesis will prove a valuable mental exercise, and convince them that the original act was worthy of the degree of M.D.

A MANUAL OF OBSTETRIC PRACTICE. By Professor A. DÜHRSSEN,
M.D. English Translation of the Sixth Edition. (*London:*
H. K. Lewis. 1897.)

THIS is a translation by J. W. Taylor, F.R.C.S., Birmingham, and Dr F. Edge, Wolverhampton, of a work whose first edition is dated Berlin, 1890. That it has gone to a sixth edition shows that it has been highly appreciated in Germany, but we have seldom read a work in which so much good material has been so awkwardly arranged. For example, in the chapter headed "Labour obstructed by abnormal resistance on the part of the Child," is treated precipitate labour, eclampsia, haemorrhage, placenta prævia, anaemia, prolapse of funis, and asphyxia. This necessarily gives rise to repetition, a serious matter in so small a book,—nephritis being discussed at page 97, and more fully at page 165, and pelvic measurement appears in the introduction, and again in two chapters further on. One never knows, in commencing a chapter, where the discursive mind of the author will wander. He is so thorough and convinced an antiseptist, that the necessity and mode of disinfection is reiterated every time an examination or operation is alluded to.

Dr Dührssen is fond of operating, and quotes with approval

Kehrer's removal of the areola to cure depressed nipples; he prefers incision of the os to gradual dilatation, and quite frequently incises the perinæum laterally, to save laceration. To avoid a ventral scar, he has invented what he calls vaginal Cæsarean section, which is not indicated in *strongly contracted pelvis*. It consists of crucial incision of the thinned portio vaginalis to allow of rapid extraction. But how can this operation take the place of the ventral incision?

After cross-births comes the examination in normal labour, in which, rightly, the fullest instructions are given for disinfection of the hands and instruments. "The first thing the physician should do is to use the thermometer: to take the pulse makes the patient nervous, and should be delayed until the excitement of his arrival has subsided. Then, *as a matter of principle, the physician should disinfect the external genitalia of every woman in labour.*" (The italics are not ours.) This principle is elastic, as further on we read: "In the praxis pauperum this procedure meets no difficulties; and in the praxis elegans it is, at anyrate, to be carried out whenever chloroform is given." The position of the patient is the usual Continental dorsal position; and frequent examination is deprecated, though complete abandonment of internal examination is not considered advisable or practicable. "Ritgen" manipulation may be used to express the head from the vulva, *i.e.*, two fingers in the rectum. (The reviewer finds pressure on the postanal region quite as efficacious, and more cleanly.)

Split perinæum, and its immediate and late repair, are now considered another instance of bad arrangement; but the figures given do not help us much to understand the writer's meaning.

In the same page we are interested in the third and fourth positions of the head. Rotation with the forceps to bring the small fontanelle to the front is obsolete. We are twice told this, but nevertheless it is not obsolete in England.

Here are strange sayings. Among "striking symptoms" are: "A rigor and perspiration immediately after the labour. (These cannot be produced artificially.)" "The navel may be the seat of origin of fatal septicæmia. The midwife should, there-

fore, be ordered to tend the child, and then the mother afterwards." These may be slips of the translator's, but are confusing.

The chapter on Abortion is the best in the book. The author prefers tamponage of the uterus and vagina, which he says makes the curette seldom necessary.

In treating eclampsia, "if the patient cannot swallow, feeding by the mouth must, of course, be forbidden,"—which is a wise but obscure saying.

In placenta prævia, tamponading, followed by combined version, is recommended, the Berlin mortality being only 4·5 per cent. Combined version, he says, should not be undertaken in the lateral position, since fatal air embolism may thus occur. In rupture of the uterus, he recommends plugging the abdominal cavity through the rent where a skilled operation is not available, and the gauze is removed in twenty-four to forty-eight hours.

True septicæmia is caused by the absorption through the lymphatics of the products of bacteria, because practical antisepsis has not yet become a general characteristic of doctors and midwives.

Space will not allow of an enumeration of all the good things in this book, but the arrangement of matter is atrocious. This is a manual, and a short one—only 300 pages; and by proper editing and avoidance of repetition it might be reduced one-third.

One criticism more. The specialist is exalted; the general practitioner is relegated to the back ground, where he may perhaps be allowed to view a labour from afar off if he has on an aseptic gown.

PAPERS BY DR APOSTOLI, Paris.

We have received some papers by Dr Apostoli, which were read at the Moscow Congress.

One is the record of severe dermatitis caused by two applications of the X rays, the Crooke's tube being at a distance of 6 inches for forty minutes, and 4 inches for ninety minutes. The symptoms were nausea, erythema, vesiculation, and eschar.

Recovery after ordinary local treatment was obtained under static electricity and the undulatory and high frequency current. He suggests that the distance was too little, and the use of a protective shield of aluminium. We are informed by a friend who has skiagraphed over 300 cases that he has never had any trouble; but there is sufficient evidence of occasional accident.

Another is in galvano-puncture for the cure of nævus : the difficulty is in the exact dosage, which should be from 5 to 15 milliamperes. For the relief of pain and congestion in general therapeutics, he employs the *courant ondulatoire* locally, and by means of hydro-electric baths, and finds it also a good muscular excitant.

PRACTICAL MUSCLE-TESTING AND THE TREATMENT OF MUSCULAR ATROPHIES. By W. S. HEDLEY, M.D. (Pp. 128. 8vo. 3s. 6d. H. K. Lewis. 1897.)

IT is with great pleasure that we welcome a really serviceable text-book of medical electricity, which is a distinct advance on anything of the kind which we have seen, and indeed leaves little to be desired. It is enough to establish the reputation of its author as a sound neurologist and a skilful teacher. It takes a position with regard to electricity similar to that which was taken nearly twenty years ago by Sir W. R. Gowers's excellent monograph on the diagnosis of diseases of the spinal cord. It presents all the really useful and practical results of the application of electricity to medicine in a readable and concise form, and omits the wearisome and doubtful details which render most text-books on the subject a bewilderment and a burden to the busy practitioner and the overworked student. Above all, there is no quackery in the book ; no occult virtues are claimed for electricity ; all the statements rest on a basis of scientific and observed fact. We hope Dr Hedley's book will become a recognised text-book in the schools, and are persuaded that if it does it will go a long way to raise the medical use of electricity from the neglect and uncertainty with which it is at present surrounded.

TRANSACTIONS
OF THE
LIVERPOOL MEDICAL INSTITUTION.

SESSION 1896-97.

FIRST ORDINARY MEETING, HELD 7TH OCTOBER 1897.

RUSSIA AND THE TWELFTH INTERNATIONAL MEDICAL CONGRESS: THE INAUGURAL ADDRESS, given on 7th October 1897, at the opening of the Session 1897-98 of the Liverpool Medical Institution. By the PRESIDENT, RICHARD CATON, M.D., F.R.C.P., *Physician Royal Infirmary, Liverpool.*

(Illustrated by fifty lantern slides.)

GENTLEMEN.—The retrospect of last autumn's visit to Russia, in so far as the writer's mind is concerned, abounds in pleasant, interesting, and amusing memories. He wishes it were possible to bring these scenes with equal vividness before the present audience. Much was seen of great interest, bearing on the history and general character of the country and its inhabitants. Many delightful meetings with old medical friends from distant parts of the world took place, many new friendships and acquaintanceships were formed. Some knowledge was gained of the hospitals and medical schools of Russia, and of the means and methods by which Medicine is there being advanced; and lastly, a mere glimmering was obtained of the contents of a few of the papers, one thousand in number, which were discussed in the Sections of the Congress.

I warn you that you must look for little Medicine in this paper: he who hopes to learn new facts in pathology, diag-

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nosis, or treatment will be disappointed. The writer went to Russia primarily for a holiday and a rest, and only regarded as a secondary object the opportunities he might enjoy of advancing his medical knowledge. This programme was carried out so fully that he felt himself somewhat of an impostor when the Congress authorities elected him one of the eight British Vice-Presidents.

I, therefore, only propose to record a little miscellaneous gossip about the journey, the country, the doctors, the hospitals, and the events of the Congress.

A week's scramble among the crags and gorges of the Harz Mountains, and some days' exploration of various picturesque North German cities, such as Hildesheim and Goslar, formed a good preparation for the fatigues of the Moscow journey. The route to that capital we also interrupted, first at the old Polish city of Thorn, the birthplace of Copernicus, and next at Warsaw. The one day we could spare for the ancient capital of Poland was fully occupied in observing the general characters of the city and its inhabitants, the churches, the Vistula, and the palaces of the ancient Polish sovereigns.

In visiting the beautiful Lazienki Palace, which was being prepared for the approaching visit of the young Czar and his wife, we twice walked over the dynamite mine which, sad to say, was also being prepared for him, but which happily was discovered and rendered harmless prior to his visit. The Chateau or Palace of Villanov also, built by the great Sobieski after his victory over the Turks, and the lovely gardens planned by him in his latter years, were well worthy of a visit.

Unfortunately, all sketching or photographing is prohibited in Russia; nevertheless, many of us were determined to do one or both, consequently it was not surprising that a brother Congressist, Dr Cooper Pattin, of Norwich, was constrained to spend a little time in a Warsaw prison, and I ought to have had the same fate, for I took many photographs, but when offending, I endeavoured to avoid the vigilant eye of the police. (In Moscow this rule was partially relaxed in favour of the Congressists.)

Now came the dreaded journey across the hot, dusty plains of

Central Russia. Terrible was the scramble for places in the railway carriages, and most hard would our fate have been, knowing as we did scarcely a word of Polish or Russian, had it not been for the kindness of a Russian artillery officer, Count de Platanes, whose acquaintance we had casually made the day before, who, through his influence with the railway authorities, took no small trouble to reserve us a coupée (with two beds), which we occupied all the way to Moscow. I mention this as an example of the great kindness we and others received on various occasions from Russians whom we met.

Our train contained about six hundred doctors, of every nationality, of whom, I think, only three individuals were British. Onwards it moved at a slow rate for two days and a night. The line follows in the main the route of Napoleon's army in his advance and retreat. Thus we passed Minsk, Smolensk, the Beresina, Borodino, Krasnoe, and other places prominent in the story of that campaign. Of our own advance over this historic ground I could tell various tales, having their share of comedy and tragedy : how, at Warsaw, for an hour and a half our compartment was besieged by scores of North German doctors, who were determined to enter our coupée, although it was reserved, but who, by constant vigilance and a good lock, were kept out. How our six hundred, with the gallant contingent from North Germany ever in the van, stormed the refreshment car, and left no scrap of food nor one drop of beer or other drinkable fluid, within a few hours of our departure ; how, at every stopping-place where there was a buffet, we descended upon it like a swarm of locusts, and left but little behind ; how awfully hot it was ; how our compartments, our baggage, and ourselves were dyed one uniform snuffy brown colour by the volumes of dust blown in as we crossed the arid steppes of Russia ; how the water in the lavatory tank gave out at an early age, and washing became impossible, unless when some kindly Muscovite railway porter brought a pail in which to dip hand and face ; how weary we got of the great plains and the dark forest, inhabited only by the bear, the wolf, and the deer.

I must say everybody kept fairly good-humoured all the time ;

and the railway and refreshment people were kindly, and free from extortion.

When, after the long, long journey, we caught the gleam of the sunset on the golden domes of Moscow, the vision was indeed welcome; and after rattling over a couple of miles of the roughest pavement in a drosky, the front wheels of which were about the size of a soup-plate, it was pleasant to reach the huge and strange caravansera which was to be our home in Moscow, and most delightful to have a good wash and a change of raiment.

The vast Manége or riding-school, where the Russian cavalry exercise in winter, was the reception-room of the Congress. Here all the business part of the Congress work was transacted. Here luncheon was obtained. The excellent Trochgorny beer, made from the water of the Beresina, was here dispensed at a penny a glass. Of this fluid we must have drunk hundreds of gallons, for, being almost non-intoxicating, cool, and wholesome, it was very tempting to thirsty pilgrims from the West, who suffered much from the desiccating heat of Moscow. The chai or Russian tea and all sorts of refreshments for the inner man were here provided. Here was the post-office, and a sort of waiting-room for each Section, where the members could rest and converse with those of their own departments.

The Sections themselves were scattered through the new and old University buildings opposite the Manége, in the Club of the Noblesse, and in the great Museum, all within convenient distance.

We arrived on Tuesday the 16th of August, two days before the Congress began, so escaped the terrible crush in the Manége, which some later arrivals experienced. Though the most careful arrangements are made, it is difficult to prevent crush and confusion when thousands of people, talking every civilised and some rather uncivilised languages, are met together, and everyone wants to be attended to at once. I must say, much of the confusion which sometimes occurred was the fault of the Congressists themselves. Some of our Teutonic brethren were undoubtedly rude, and lacking in consideration for others. Per-

sonally I found the attendants civil and courteous. A babel of seven thousand people would tax any organisation.

On Thursday, the opening meeting took place in the Grand Opera House, a theatre finer than any we have in England. The Grand Duke Sergius occupied the chair. For two hours after his brief address of welcome, speeches were delivered by our hosts and by representatives of every nationality, excepting, perhaps, the Chinese. Several thousand of us in evening dress sat and listened to these orators with more or less patience: brevity was to all appearance the quality which we appreciated most, and not even the vigorous gymnastic performance of certain speakers of the Latin races compensated for its absence. At length the meeting terminated. Then, after an interval, we reassembled, and addresses on scientific topics were delivered by Professor Virchow, Dr Lauder Brunton, and Professor Lannelongue.

That evening a great reception was held in the New Bazaar in the Kitai Gorod, or Chinese City. Ten thousand visitors were present, several groups of singers and dancers entertained us, while a most elaborate standing up supper was provided. A splendid military band performed in turn the national airs of every country, which, with the exception of a little dissent in the cases of the "Wacht am Rhein" and the "Marsellaise," were enthusiastically received.

On Friday the 20th all the Sections were in full work, and, in the case of the larger Sections, were only too well attended. Section 5, Internal Medicine, met in the grand ballroom of the Nobles' Club, a splendid room, but defective in acoustic qualities.

In this Section the general arrangement of subjects was as follows:—The papers to-day were all French, German, or Russian, and chiefly on kidney diseases,—Professor Von Leyden taking the lead. The uses of Röntgen rays and the treatment of obesity were discussed later.

Frequently it was difficult to hear or follow the papers and discussions on account of the large number present and the acoustic defects of the room.

On Saturday, in the same Section, Von Ziemssen read the first

paper on the Climatic Treatment of Tuberclse, and several other authors followed with miscellaneous contributions to the pathology and treatment of the same disease. The rest of the day was occupied chiefly by the subject of Malaria, nine papers being read by different authors.

Monday was devoted to diseases of the Liver, Typhoid, Serum Diagnosis, Typhus, and certain points in general physical diagnosis.

Tuesday was set apart for the discussion of Chlorosis and diseases of the Circulatory System.

Wednesday was devoted to diseases of the Alimentary Canal, to Hepatic Cirrhosis, and other miscellaneous topics.

An English paper usually cleared the room, or nearly so, of all but English and Americans, while a Russian one drove everybody away excepting natives.

This short sketch gives a general idea of the judicious plan on which the business of one Section was arranged: probably something similar prevailed in others.

Some Sections were subdivided, *e.g.*, Therapeutics had three Subsections, viz., (*a*) General Therapeutics, (*b*) Pharmacology, Balneology, and Climatology, and (*c*) Pharmacognosy and Pharmacy.

Frequently two or more Sections would unite for the consideration of some subject common to all, as when the children's diseases people, the therapeutists, the laryngologists, and the hygienists combined for the consideration of the serum treatment of diphtheria, or when the surgeons and the nerve diseases people together discussed the surgery of the nervous system.

Sometimes a Section paid a visit to some hospital or other locality associated with its special subject, as when Section IV. moved for part of a day to the Institute of Pharmacology.

During all this Sectional work the writer, like many of his countrymen, felt keenly his linguistic defects, and wished he had a more thorough colloquial knowledge of French and German.

It must be admitted, however, that to many of us the attractions of Moscow as a city outweighed the interest of the Sections,

and that we only too often played truant. We could read all these learned papers another time, but when should we see the Kremlin, or the Sparrow Hills, or the Troitsa Monastery again ? Moreover, the great heat made steady work irksome.

The strangeness, the historic interest, the singular colour effects of the Kremlin, with its churches and palaces, armoury and treasury ; the thousands of adoring pilgrims in quaint attire ; the grand bass voices and sweet choral singing in the churches, the relics, the richly jewelled icons, the soft, rich tone of the great bells, exceeding both in size and in melody those of the rest of the world (I saw three, weighing respectively 45, 46, and 200 tons) ; the singular barbaric architecture, the glorious views from the Tower of Ivan in the Kremlin, surpassing in colour, in the blaze of gold, and in the strangeness of architectural form anything we had ever seen before ; the lovely view from the Sparrow Hills (whence Napoleon first saw Moscow), with the splendid sweep of the river, and beyond it the great city, spread out for miles like a vast jewelled cope, its golden cupolas shining in the sunset,—all these things and many more impressed and captivated us. Naturally we said, “ How can we talk of tuberculosis and malaria in the presence of all this ? Let us enjoy these wonderful sights while we may. Give physic to the dogs—I’ll none of it, until my holiday is done ! ”

So far did these treasonable views influence some of us, that on one occasion a large party of English-speaking members deserted Moscow for a whole day to visit the great Monastery of Troitsa at Sergievo, where dwell the monks of St Sergius. A martial company they were in former times, members of the church militant, whose monastery is still a fortress, surrounded by towers, flanking bastions, and loopholed curtains. Here the valiant monks have sustained prolonged sieges from Tartar hordes or Polish armies, and usually they have been victorious.

Russia is in several respects distinctly mediæval. One cannot see the country-people without feeling that the age of faith, for them, still survives, both for evil and for good. There is the general ignorance and the superstition which prevailed in the West in the fourteenth century. There is also a most beautiful

and unwavering faith. It was interesting to see the peasant from far country districts, who had walked scores or hundreds of miles to visit Moscow and the Troitsa. Some of the men were clad in sheepskins with the wool inwards, the women with short skirts, brightly coloured loose bodices, and headkerchiefs, the leg bandaged with folds of white linen, with foot-gear composed of platted reeds, while a pilgrim staff was carried in the hand. Their hard, ungainly faces were beautified by an earnest and devout expression. One could not fail to observe their entire absorption in the thoughts aroused by the holy places they visited. They never took the slightest notice of the outlandish British travellers, unless it were to look wonderingly at their seeming irreverence. In the Church of the Trinity in this monastery the pilgrims' one thought was of the blessed Sergius, whose body lay there, as they believed, miraculously incorrupt; to burn candles before the shrine, to kiss the corpse through its lace coverings, to cross themselves and bow, to buy cheap icons made by the monks, and laying them for a second on the sacred body, reverently to wrap them up in a clean napkin for conveyance home as a priceless treasure; to kiss the sacred jewelled icons on the chancel screen, and the floor of the side chapel where the feet of the blessed Virgin and those of St Peter and St Paul stood when they visited St Sergius,—all these were soul-inspiring duties. These good souls were to be seen standing for hours at a time during the church service, with rapt faces, or bowing or prostrating themselves on the floor. Thus they went from church to church within the great monastery, not failing to visit the sacred fountain of St Sergius to drink the water, reverently laving face and hands, and taking home some in a flask, along with a loaf of the sacramental bread. All this, I say, was mediæval. The fortification of the monasteries and convents is another example of the survival here of ancient usage. It existed in the West in the thirteenth and fourteenth centuries—and indeed monks and abbots, and even bishops, then engaged in active warfare.

Though time fails to describe a tenth part of the attractions of this monastery, I must briefly mention our visit to the

'skit,' or hermitage, of Gethsemane, some miles distant, where usages not merely mediæval, but dating from the second and third centuries are still in vogue. Like the hermits of the Thebaid or of Palestine, religious devotees here entomb themselves for a long life in deep and gloomy catacombs. Traversing these dark and narrow subterranean galleries, we were in much too close proximity to the modern Russian pilgrim, who, both in regard to 'bouquet' and entomologically, is far from a desirable neighbour in a crush. Though perhaps very saintly, he cannot be said to have the odour of sanctity. Among many other such places we were shown a dark, damp chamber, about 8 feet by 12, in which a youth, who had lived with his fellows until his 18th year, voluntarily entombed himself, far from light, freedom, social converse, and all the pleasures of life, in order to devote himself to religious contemplation. He might have come forth any day, but he preferred to dwell there, without a break, until in old age death released him. Many others have done this, and many are doing it now. The life of St Simon Stylites was, I think, preferable. He, at anyrate, had the sun and the beautiful world to gaze at always from the summit of his column. Such self-conquest may claim our wonder and admiration, but is not likely to be contagious, at anyrate in the West.

Although it is rather an abrupt transition from an asceticism worthy of the second century to the scientific medicine of the eve of the twentieth, I must say a word or two about the hospitals, and the progress of medical science in Moscow and St Petersburg.

The great Clinical Hospital at the Dievitchie Pole at Moscow presents, perhaps, the most remarkable example of the classification of diseases and treatment to be found in the world. The municipality and some private donors gave between fifty and sixty acres of land for the purpose, and upon it have been constructed, in accordance with advanced sanitary principles, the following group of hospitals:—an institute of gynæcology, an obstetric hospital, an asylum, an hospital for nervous diseases other than insanity, an hospital for the simpler form of medical

and surgical diseases to be attended by junior students, another for more complex cases for the senior students, an institute of hygiene, general pathology, and pharmacology; an hospital for disease of the eye; another for those of the larynx and ear; an hospital for children's diseases; an hospital for skin disease and for syphilis; an institute for pathological anatomy, for hygiene, and operative surgery; also isolated wards for cases of infectious disease; ambulance departments; a church for the patients and staff; residences for the clergy, for the professors and teachers, the resident physicians and surgeons and the attendants; two mortuary chapels; and the necessary administrative departments.

The cost of all this was £420,000, and it is maintained by a Government grant of £42,000 per annum.

I may mention that the appliances for electrical treatment, for the scientific use of baths, for diagnosis by Röntgen rays, and for the performance of surgical operations under antiseptic precautions, were perfected to a degree uncommon in hospitals at home.

At the close of the Congress, the Grand Duke Sergius and the Grand Duchess entertained those of the members who had not left Moscow at the Alexandrina Palace. Many other festive gatherings were held, which space will not allow me to mention. Now the rush to St Petersburg began. Many of the members had to wait long before they could obtain seats or sleeping-berths in the express. The transport of several thousand first-class passengers so long a distance, all at one time, was no easy task for the Nicolas Railway. I shall not soon forget the scene at the Moscow station when the night express started, and scores, if not hundreds, of our brethren were left behind, with only the hope of a possible seat in the slow train next day to comfort them.

From the dry air and almost tropical temperature of Moscow we changed in a night to chill mist and rain at St Petersburg. Here the art treasures of the Hermitage and Winter Palace claimed our attention; the great library also, with the Sinaitic codex, and hundreds of precious manuscripts. We paid a

formal call on the Mammoth, admiring his long red hair, and examining the small remains of his soft tissues which have been preserved.

The Fortress of Peter and Paul, containing the Cathedral, where rest the remains of the Emperors from the time of Peter the Great, was visited by most of us; also the wonderful Cathedral of St Isaac, which cost three and a quarter millions sterling. We climbed its dome to see the glorious view, only less striking than that from the Tower of Ivan. Most of us also visited the Kazan Cathedral, and the grand church now rising on the spot where the noble emancipator of the serfs, Alexander the Second, was assassinated: also when the weather was fine we enjoyed pleasant trips among the islands of the Neva. Among the last and most noteworthy events of the Congress was the invitation, with which six hundred of us were honoured by the Emperor and Empress, to visit the palace at Petershof. After being conveyed thither in the royal yachts, we viewed the palace, the beautiful gardens and fountains, and were entertained at a most sumptuous luncheon in the grand salon of Peter the Great. The Emperor and Empress being *en route* for Warsaw on that day, we did not see them.

The municipality and various societies and individuals exercised also a most generous hospitality in St Petersburg.

This paper has grown to so portentous a length that I dare not say much about the admirable hospitals and medical institutions of the northern capital. The Imperial Institute of Preventive Medicine, which has six endowed chairs and a revenue of £14,000, and the buildings and appliances of which cost £60,000, was visited by great numbers of members.

In concluding this paper, I desire to express the feeling, which I think all of us entertained, of our great indebtedness to His Majesty the Emperor, to the Grand Duke Sergius, to the Government, the officials of the Congress, and the Russian people for their generosity and hospitality. The Government gave to each of us a free pass by rail from frontier to frontier; also offered us, at reduced rates, trips to the Caucasus and the Caspian. The galleries and exhibitions, for which a charge is

usually made, were thrown open to us; moreover, various police regulations were relaxed on our behalf. We are also grateful for the kindness so many of us experienced from individual members of the medical profession, from medical students, and from laymen, and not least are our thanks due to the ladies' committee, who so kindly and courteously ministered to our womenkind when we were engaged in Sectional work. Many of us, I believe, have formed the opinion that the educated Russian is perhaps the most courtly and agreeable person it has been our good fortune to meet. Many prejudices in regard to Russia have been modified by experience; and most of us, I think, will in future cherish a kindly and sympathetic remembrance of that land and its people.

SECOND ORDINARY MEETING, HELD 21ST OCTOBER 1897.—

Dr RICHARD CATON, President, in the Chair.

Ileum Strangulated through a Congenital Mesenteric Hole.

MR STANLEY KELLETT SMITH related the following case. The patient, a young girl, was suddenly seized with pain when walking in the street. She had pain and vomiting; the abdomen was flaccid and flat. There was some dulness in the right iliac region. There was no tumour. Four days later the pulse was 140, respiration 30. No flatus had passed since the first attack of pain. The abdomen was tympanitic, but there was some dulness in the right iliac region. The abdomen was opened, the distended bowels allowed to escape, and eventually a dark purple portion of the ileum found strangulated by passing through a hole in the mesentery. The strangulation was relieved and the wound closed. The patient made a good recovery.

Excision of the Kidney for Primary Carcinoma.

MR THELWALL THOMAS exhibited a patient from whom he had removed the right kidney for primary carcinoma. The man,

aged 39, said his urine had been coffee-coloured two years ago. Occasional attacks of haematuria occurred in the last twelve months, and he steadily lost weight. A month before the operation he fell, striking his right side. He immediately passed half a pint of bloody urine and clots; after this he passed no urine for three days. His temperature oscillated, suggesting suppuration. The tumour was large, and occupied the kidney area and the right iliac fossa. A transverse incision was made immediately under the last rib, exposing the kidney, and rapidly enlarged forwards, the peritoneum being peeled off the kidney. The tumour, which weighed 2 lbs. 2 ozs., was removed. The microscope showed a carcinoma with large cells, as seen in suprarenal 'rests.' The patient had gained about two stones in weight since the operation.

Dr E. T. DAVIES said:—The advantage of the transperitoneal incision over any other is, that it affords an opportunity of examining the condition of the other kidney, whether it be healthy or diseased, which of course is a matter of great importance to the patient; also in very large growths, whose removal could not be effected by the lumbar route. Primary carcinoma of the kidney appears to be a disease of extreme rarity. Mr Bland-Sutton avers that he only knows of three true examples of the disease. He also states that most of these cases prove rapidly fatal from recurrence. Mr Thomas is to be congratulated on the excellent primary result of his operation.

Mr PAUL said the microscopical character of the tumours were those usually observed when cancer commenced in the glandular substance of the kidney. He thought the character of the cells, their arrangement, and the presence of a cyst in some cases, pointed to the origin of this form of cancer in the true renal tissue, rather than in adrenal 'rests.'

Mr RUSHTON PARKER remarked that, about one and a half years ago, he had operated for a large tumour of the kidney in a woman aged 42, who had had the growth for more than seven

years. Some seven years before operation she had been under the care of Mr Paul, who had offered to remove the tumour, but she declined. The tumour was regarded as non-malignant, and its removal important. The operation was performed in May 1896. A long incision was made in the right side, half intra- and half extra-peritoneal. The removal of the tumour was effected with unexpected ease; the haemorrhage did not appear to be great, but the patient was profoundly collapsed for a day or two. A month later lumps appeared in the left loin, and were at first thought to be scybala, but they increased in size, and were evidently due to recurrence of the growth. She died in less than two months after operation, and a post-mortem examination revealed extensive recurrence at the site of the kidney, and many deposits in the peritoneum.

Microscopic examination proved the growth to be a carcinoma.

On the Typhoid Serum Reaction in Doubtful Cases of Fever.

DR CARTER related the following facts, which had recently come under his observation, and which he said must either raise doubts as to the general reliability of the serum diagnosis of typhoid fever, or compel us to enlarge our conceptions of that disease.

On April the 3rd of the present year I saw, in consultation with Drs Walby and Dubourg, Dr W. E. D., who was then in the third day of an illness that had commenced with feverishness and general malaise. As the disease progressed, typhoid fever was diagnosed, the diagnosis being apparently confirmed by Widal's test. The report sent from the Bacteriological Laboratory of University College was that the reaction produced by a dilution of 1 to 32 was "positive and marked." The highest temperature reached was 104·4°. It being judged advisable to remove the patient from his own house, he was taken, on the eighth day of his illness, to a medical home. Five grains of quinine were given to him an hour before starting. On the following day at 2 P.M. the temperature was 100° F., on the next day at 10 A.M. was 99°, but henceforward was either normal or sub-

normal. There was no diarrhoea; but for some days an irritating cough, with slight hoarseness. Four days later the serum was again tested, the report being "positive, but poor." Fifteen days after the first it was examined for the third time, the report on that occasion being "1 to 30 negative; 1 to 10 negative."

On 16th May my daughter complained of feverishness and general malaise. The temperature in the mouth was 102·4°, and in the evening 104°. On the following day serum was sent for examination, the report being "1 in 30 positive." The fever continued till the 20th, *i.e.*, five days, when it subsided and did not recur, the patient remaining very weak for seven or eight days more.

On 23d March 1897 Annie W., *æt.* 30, was sent to hospital by Dr Chisholm, suffering from what was believed to be typhoid fever of, I think, seven days' duration. Serum was obtained and submitted to examination on the following day, *i.e.*, on the ninth day of the disease, with an entirely negative result. Before the result of this examination was reported, an injection of typhoid antitoxin was made, and on the following day a further examination of the serum was made, the report now being "positive." It was assumed that this result might be due to the introduced antitoxin, but to help to clear up this point, a similar dose of typhoid antitoxin was, with his consent, hypodermically injected into a patient suffering from appendicitis, and some of his serum sent for examination, the blood being withdrawn the same length of time after injection as in the previous case. The result was entirely negative. The case which gave the early negative result went through a fever of eighteen days' duration, which I have no doubt was typhoid.

To test this matter somewhat farther, I mixed a small quantity of typhoid antitoxin, the bottle of which was opened for the purpose, with a capillary tubeful of my own blood last evening. The result, as communicated to me by Dr Warrington this evening, is that stoppage of movement was effected by a dilution of 1 in 24, but that there was no agglutination.

I will make no farther comment on the above cases than to repeat that if the first two were typhoid we shall have to

enlarge our conceptions of that disease ; and with reference to the third, to say that it is wiser to wait for facts as to the cause of the agglutination than to settle beforehand what must and what must not bring it about ; as the antitoxin (usually assumed to be the agent) did not do it, either after having been passed through a patient's blood in the ordinary physiological process, or when mixed with healthy blood outside of the body.

Professor BOYCE said the value of the serum reaction had been proved by thousands of cases collected in Europe and in America. In both continents numerous discussions had taken place at the various Medical Societies, and the outcome had been the same. At the recent discussion at the Section of Pathology of the British Medical Association the importance of the reaction was amply verified, and there can be no doubt that the vast majority of cases of typhoid fever give the reaction. However, two important questions may arise : (1) Does absence of reaction preclude typhoid ? (2) Does a positive indication always signify typhoid ?

In answer to the first question, experience shows that there may be retarded reaction, hence the importance of numerous trials ; and in one or two cases, when the absence of the typhoid bacillus had been proved, a reaction was obtained. The answer to the second question was an almost unqualified affirmative.

Dr N. E. ROBERTS said that it was disappointing to the physician to come across cases where the serum test did not answer. He had four cases of that kind in the typhoid wards of the city hospitals at present. Three of them were undoubtedly typhoid, and he believed the fourth was also ; yet the result of the serum test was entirely negative. On the other hand, in the large majority of cases the results were highly satisfactory, and the test was a valuable addition to the resources of the practical physician. There were in these hospitals that day 55 cases sent in as typhoid. Of these 39 responded to the test definitely and promptly—most of them within a quarter of an hour. What struck him as significant was, that on clinical grounds he had no difficulty in accepting the verdict in respect

to these cases, and most of them had all the classic signs. On the other hand, 16 cases failed to respond. Four of these were typhoid, 2 typhus, 3 chest disease, 1 malaise, 6 uncertain.

Some Clinical and Statistical Evidence of the Value of the Antitoxin Treatment of Diphtheria.

DR E. P. MANBY, who read this paper, said:—I do not think that a paper on the subject of diphtheria and its treatment will have the same interest to the members of a medical society in Liverpool as it would have in London.

Our death-rate from diphtheria here in 1887 was 17 per 100,000, and it is now 18 per 100,000.

In London, on the other hand, in 1887 the death-rate from diphtheria was 22 per 100,000, and it is now 60 per 100,000. The question is a very serious one for London, and, I trust, some remarks on the antitoxin treatment there, may not be without interest to you.

I may say at once that my paper is entirely a personal one. I happened to be in the service of the Metropolitan Asylums Board, at their hospital at Tooting, for some months before the antitoxin treatment was tried there, and for a year or more after its introduction—altogether, an experience of 750 cases; and it is upon this experience, together with the statistical results of some 10,700 cases, treated in all the Board's hospitals, that the paper is based.

I do not attempt to emulate Drs Herman Biggs and Arthur Guerard, and others, who have compiled and tabulated nearly all the reported cases of diphtheria treated by antitoxin, throughout the civilised world.

As to the history and development of this treatment, I need say little. Dr Roux's great paper at Buda Pesth Congress in 1894 is well known; and three years before then, at the 1891 Congress, Drs Behring and Wernicke had reported their first experiments with the blood serum of immunised animals, follow-

ing this up the next year by applying the treatment to diphtheria in man.

The question of the formation of toxin and antitoxin in the body, too, does not come within the scope of this paper. Serum therapy is an accomplished fact, particularly as applied to diphtheria.

Nor need the preparation of antitoxin commercially, so to speak, detain us. This must always be a matter for the bacteriological specialist alone, and not of any practical value to the medical practitioner using the serum.

Perhaps, however, a few words as to the serum when ready for use may not be out of place, before proceeding to the important question of dosage. At the Tooting Hospital the serum used for the cases on which this paper is based was partly supplied by the British Institute of Preventive Medicine, and partly by Dr Sims Woodhead from the laboratories of the Royal Colleges on the Embankment. Roughly, about 150 cases were treated with each. Now, Dr Woodhead supplies all the serum for all the hospitals of the Board, I may say.

Besides these, a few cases were treated by the dried serum supplied by a private firm, the results with which were not very satisfactory, and no more was used.

The serum was delivered to us in sealed glass bottles containing 20 to 30 cubic centimetres. It was always kept in a cool place, and fresh supplies were obtained as often as possible; that is to say, an unduly large stock was never kept on hand,—a point of practical importance.

The strength of the serum, as sent out by the British Institute, was about 600 to 800 Behring's normal units to the 10 c.c., and from Dr Woodhead's laboratories rather less—500. Now it is sent out very much stronger and more accurately standardised—always 2000 normal units, often 4000, and sometimes even 8000 in the 10 c.c.

Dosage is always now spoken of in 'normal units,' and a 'normal unit' on Behring's standard is "ten times the amount of antitoxic serum which is requisite to completely counteract

the effect of ten times the lethal dose (within four days) of toxin in a guinea-pig weighing 250 grammes."

Though this sounds complicated, it is a standard to work with, and that is a great thing. At first we had to get along very much by the light of nature in the matter of dosage. The standardising of the serum was indifferent; we had nothing to go by, and simply gave so many c.c.; and from clinical observation we soon found out that the serum varied very much in strength and efficacy.

Since the above was written, the whole question of 'normal units' and standardising seems likely to be upset again. Ehrlich improved on Behring's method by preparing a standard antitoxin by which a standard toxin can be prepared, against which other antitoxins may be tested. And within the last month or so he has started another method. Instead of adopting the absence of local reaction within four days as the criterion of toxin-neutralisation, he relies solely on the occurrence of the death of the guinea-pig within that time. We are, however, I imagine, still some way off a perfectly satisfactory method of standardising.

As to the dose to give, the best results are undoubtedly obtained by one or two large doses at first rather than continued small ones, and, as I shall presently show you, the earlier the treatment is commenced the better for the patient.

Given a severe case, say on the second day of the disease, 4000, 8000, or even 12,000 units should be given at first, and half as much, or even the same dose again, in 6 to 12 hours, and perhaps repeated again after the same interval.

I am not aware that any harm can be done by a large dose, I know that no good is done by a small one; unless, that is, you get the patient very early, e.g., first day, when 2000 units may suffice for the first dose, or even altogether. But to go on day after day injecting small doses into bad cases, as we did at first, is almost useless. Enormous doses are essential for bad and late cases, and even then they are often powerless to cure; as the Metropolitan Asylums Board antitoxin report says:—"2000 units on the first day will secure a result that 50,000 will not on the fourth."

Throughout the Metropolitan Asylums Board hospitals last year the average number of injections per patient was 2·2, and the average number of units per patient 5000. This, I think, is too little; and I understand that this year larger doses still are being given, with still more satisfactory results.

The size of the dose should be regulated by the severity of the case, and not by the age or size of the patient. Much undeserved discredit was at first thrown on the treatment by following the dosage of ordinary medicines for children as compared to adults.

For injecting the serum I prefer a Koch's syringe holding about 15 c.c., but the kind of syringe is quite immaterial, as long as all parts of it can be efficiently sterilised. The syringe and needle should be boiled for a few minutes, then taken out and placed in cool *boiled* water for a minute, or kept in carbolic lotion 1 to 20, and just rinsed through with cold boiled water before using. Sometimes I did one and sometimes the other, and I do not think it matters which. Perhaps the most usual thing was to boil everything each time before starting on a number of injections, and then soak for a few minutes in carbolic before using for the next patient. Do not forget the rinsing through with cold boiled water each time, as either warmth or carbolic coagulates the albumen, and you get a clouding of the glass, even if no sterilising of contents!

While this process and the syringe-filling is going on, one flank of the patient should be well washed with carbolic, and a compress of lint left on till the moment of injection.

The flank is certainly the best place to inject. Some people inject from before backwards, but I always found from behind forwards more satisfactory. Apparently nowhere else does the fluid so easily and painlessly pass into the loose subcutaneous tissue. And talking of pain, let me say that, except at the moment of inserting the needle, this does not seem to be much, though the raising of a swelling on the abdomen, perhaps as large as a six months' foetus' head, looks as if it might be a very painful proceeding.

I remember in the early days of the treatment being told by a doctor he considered 10 c.c. a large dose, so he gave 5 c.c. in

each flank, and if he had to give a larger one he should certainly administer chloroform to the patient first! I told him we were often giving 40 c.c. at one spot without much pain. It is remarkable how quickly the serum becomes absorbed. After withdrawal of the needle, a little collodion and cotton-wool may be required over the spot.

Nowadays, as I have said, the serum is sent out in a much more concentrated form, and an enormous dose can be given with less discomfort than was caused by the moderate ones of earlier times.

I may perhaps say here that, except for the use of antitoxin, no alteration was made in the general treatment of the cases. We all tried iron in various forms, nux vomica, strychnine, and a host of other drugs, but never satisfied ourselves that any real benefit resulted therefrom. Perhaps strychnine may pick up a weakened heart, but that it ever prevents cardiac failures I doubt. The throats were irrigated with Condy or weak chlorine solution, as a matter of routine.

So much for the application: now for the results of the treatment. This has to be considered under two heads—

- (1) Clinical Experience.
- (2) Statistical Evidence.

Originally I intended, both for clinical and statistical results, to use my own hospital alone. In all questions, dealing with figures, however, it is best to use the largest obtainable number *on which reliance can be placed*; and as all the hospitals of the Metropolitan Asylums Board are worked on practically identical lines, I decided to use the statistics from them all—10,700, instead of 700 cases.

I say, *the largest number of cases on which reliance can be placed*; for there is no doubt that in many of the earlier private cases reported in the medical journals no bacteriological examination was made, and the cases were often indifferently reported,—indeed, there must always of necessity be great lack of uniformity in reporting such cases.

In the Metropolitan Asylums Board hospitals you have many cases drawn from all parts of London, few men treating them, and all treated under practically identical conditions,—bacterio-

logical examination in every case, constant observation, systematic and uniform methods of recording, and so on.

I mention these points to indicate the advantage of considering the statistics from an organisation like the Metropolitan Asylums Board, rather than from a collection of private and other cases. The death-rate at the Tooting Hospital agreed very closely with that of all the hospitals combined, I may remark.

It is always said that figures can be made to prove anything ; and though in the case of the Asylums Board they have certainly not been made to prove too much for the antitoxin treatment, I think everyone will admit that CLINICAL EXPERIENCE must go for a great deal also.

Working from day to day and from month to month amongst a disease, one unconsciously accumulates experience—call it ten thousand times confirmed prejudice if you will—of the course of that disease. Individual cases vary, but the type remains. In the case of diphtheria, then, can we, from a clinical point of view, say that the antitoxin treatment has brought about an improvement in that course ? *I reply, most unhesitatingly, Yes.*

Before its introduction, one knew to some extent from the first how the cases would go, barring, of course, unexpected cardiac failures in apparently mild cases.

- (1) The ordinary faecal case would do well.
- (2) The pharyngeal case appeared to, at first; but then the membrane would spread to the nose ; or
- (3) Maybe it appeared there first, and you had that indescribably foul odour and discharge from the nose, making the case become
- (4) A regular 'stinker'—a term in hospital parlance indicating at that time a very poor prognosis.
- (5) You had the case with little enlargement of glands all through, or the one where they rapidly increased as the disease progressed.
- (6) Then the haemorrhagic case (a type fortunately rare, if not unknown, in Liverpool), which came in to die only too quickly—fatal result of fatal delay sometimes, but always indicating an exceedingly severe dose of the poison.

(7) The small child with very slight laryngeal symptoms would, without fail, get worse, and come to tracheotomy in a few hours.

And so on, and so on,—all this is simply the everyday experience of all working amongst diphtheria; and it must go for a very great deal in considering a question like the antitoxin treatment.

Apart, therefore, from figures at all, if one can, as the result of daily observation, testify to the undoubted value of the treatment, surely this is a powerful rejoinder to those who, often with no clinical experience worth speaking of, carp and cavil at the treatment, because the reduction in percentage mortality has perhaps been less than was at first expected.

Practically, all cases of diphtheria, except those actually moribund, are improved by the use of antitoxin. Membrane ceases to spread, and quickly disintegrates; faucial swelling diminishes; the foul and irritating nasal discharge loses its offensive character, and quickly goes altogether; the patient brightens up; and the general condition is in every way greatly and rapidly improved. The temperature, if high, usually falls; but, as you know, temperature in diphtheria is not at all a constant quantity, and the effect of antitoxin on it is not constant either.

Even in cases which come under treatment too late for recovery to take place, there is a marked improvement in the general condition of the patient, for the time being, in many ways. He will brighten up a good deal, the throat may clean considerably, and distress of breathing and swallowing be diminished. The diminution and even cessation of the offensive rhinorrhœa, which I have just mentioned, takes place here also. This is most important, not only for the sake of the patient himself, but also for the other patients and the nurses around him. The smell from the nose and throat of a bad case of diphtheria is about the worst thing I know in the way of smells.

Lastly, the patient's life will be prolonged, as actually determined by comparing the average duration of life (in days) of fatal cases in 1894 and 1895—amounting to from $1\frac{1}{2}$ to 3 days.

Mr Lennox Browne says this is no advantage if he eventually

die of the disease, but I venture to submit that our duty to alleviate suffering and prolong life extends to diphtheria equally with other diseases.

The improvement, which is marked in all cases, is most strikingly seen in laryngeal cases; and long before we had sufficient figures to enable us to make positive statements, this fact of clinical observation was common talk in all the hospitals of the Board: over and over again, cases which we should have predicted tracheotomy for in a few hours, recovered without the necessity for operation; and cases that eventually came to operation, recovered in a previously unknown percentage.

The sceptic says: Oh, but those cases which you tracheotomised in the old days would have recovered if you had left them alone! That, I am afraid, is a form of argument one can only controvert in a general kind of way by the result of experience. But I may say we were not in our first blush of surgical enthusiasm: we knew that tracheotomy for diphtheria was a thing not rashly to be advised or undertaken, on account of the high mortality afterwards; and, indeed, my own feelings often were that we put off too long before resorting to it.

I trust I have said enough now to show that, from a clinical point of view, we have in antitoxin a remedy producing results far better than anything hitherto tried; and every drug in or out of the *B.P.* has been tried at some time or other, locally or generally.

Now, to pass on to the STATISTICAL side of the question. For this some tables are necessary, but I have used as few as possible.

The antitoxin treatment, I may here say, was commenced in the Metropolitan Asylums Board on 1st January 1895.

Let us first compare the total results of the diphtheria treatment in 1894, 1895, and 1896, and then consider details afterwards.

I take 1894 primarily because that was the first year I was at Tooting, but also it was the year immediately preceding the introduction of antitoxin.

It was a fair average year as regards severity of cases, according to those best able to judge; and lastly, the death-rate was

slightly lower than in any previous year since the formation of the Metropolitan Asylums Board.

Taking first all cases of true diphtheria, not classified :—Referring to the darkly leaded space in the right-hand bottom corner of Tables I., II., and III. you will see—

1894, . 3042 cases; 902 deaths; mortality, 29·6 per cent.

1895, . 3529 cases; 796 deaths; mortality, 22·5 per cent.

1896, . 4175 cases; 871 deaths; mortality, 20·8 per cent.

Here you have an improvement of 7·1 per cent. in 1895 and 8·8 per cent. in 1896; these figures representing a saving of 250 and 365 lives respectively, if the former rate had been maintained.

I say again, these are *all* cases of true diphtheria, *i.e.*, both those treated with antitoxin and without. For when antitoxin has not been given to all cases, this is the only fair way to compare. The ideal method of comparison would be to give every case admitted as diphtheria antitoxin immediately ; and this, I believe, is done in Paris and elsewhere.

The objections are, that a not inconsiderable number of cases to which you have given antitoxin may turn out, on bacteriological or further clinical examination, not to be diphtheria at all. Without doing any actual harm to them, you have therefore given those patients a certain amount of personal discomfort at the time of injection ; and further, probable discomfort in the way of joint-pains, rash, or even abscess later on.

And on the other hand a case, obviously diphtheria, may be so mild, or at so late a stage towards recovery or death, that it may not be desirable to give any antitoxin at all.

In the Metropolitan Asylums Board hospitals in 1895, 18 per cent. of the cases admitted as diphtheria turned out not to have it. In 1896, 12 per cent. was the error.

Of course, if you wait in *all* cases for the bacteriological result, much valuable time may be lost. There is no absolute hard and fast line, and the medical man must use his discretion in each case.

Of the cases of true diphtheria admitted to the Metropolitan Asylums Board hospitals antitoxin was administered—in 1895

to 61·8 per cent., and in 1896 to 71·3 per cent. In examining the tables it is important to bear this percentage in mind.

Some well-known opponents of the treatment have endeavoured to decry it by *taking only the cases treated in 1895 with antitoxin in our hospitals*, and pointing to their percentage mortality being practically the same as that of cases for 1894: e.g., Table I. shows the total mortality to have been 29·6 in 1894, and Table II.A shows the mortality of the antitoxin cases in 1895 to be 28·1,—a difference of 1·5 per cent. Therefore, say these people, why make any talk about the value of antitoxin at all, if it only diminishes your mortality by so small an amount?

Apart from the fact that in 1896 this difference was 3·7 per cent. (*vide Table III.A*), the fallacy is easily exposed. If you have not given antitoxin to more than 60 to 70 per cent. of the cases, it is obvious that these were the more severe cases, and the remaining 30 to 40 per cent. were mild. To compare only the severe cases of one year with all cases of another year (1894) is, therefore, manifestly unfair and misleading. You must compare all cases of each year, mild and severe. But even taking only these antitoxin cases, it appears to me that, with a horrible disease like diphtheria, the reduced percentage mortality of only 1·5 in 1895 and 3·7 in 1896 would not be at all to be despised.

The reduction in the general percentage mortality of 7·1 in 1895 and 8·8 in 1896 is undoubtedly exceedingly satisfactory, though not so good as was perhaps at first hoped for. But when we begin to go into the question of age, and day of disease on which the treatment was commenced, a highly satisfactory result is shown. Table I. shows the cases for 1894 arranged in this way:—

Table II. ditto for 1895.

Table III. „ „ 1896.

“Day of disease” meaning the day on which the patient was admitted to hospital, or, in the antitoxin cases, the day on which the treatment was commenced, which was practically on admission.

On comparing these tables, it is at once seen that the diminu-

tion in the death-rate up to 5 years of age is much more marked than that of all ages:—

In 1894 this death-rate was 47·4 per cent.

In 1895 " 34·2 per cent.

In 1896 " 30·2 per cent.

A diminution of 13·2 per cent. in 1895, and 27·2 per cent. in 1896.

And taking only the cases treated with antitoxin, this death-rate is diminished 10 per cent. in 1895, and 15·2 per cent. in 1896.

We see further that the percentage mortality (with the exception of the 15 to 20 age period, where the numbers are small) is less in each age period than in 1894, and that the reduction is greatest in early life. Considering the high fatality of diphtheria in this period of life, the reduction in death-rate comes exactly where it is wanted most.

Now for the influence of the early commencement of treatment with antitoxin, the importance of which cannot be too much insisted on.

I have already said that 2000 units of serum on the first day of disease will do what 50,000 will not do on the fourth.

Let us look now at Table IV., the figures of which speak for themselves. The reduction in the percentage mortality of cases coming under treatment within the first two, and even to some extent the third day of disease is very striking:—

From 22·5 to 4·7 per cent., a difference of 17·8 per cent., or from 27 to 12·8 per cent., a difference of 14·2 per cent., is a reduction the most sanguine of us hardly ventured to hope for.

Next, a few figures showing the improvement in the results of the treatment of laryngeal cases, and in the recovery after tracheotomy:—

Table V. shows a reduction from 62 per cent. in 1894 to 30·9 per cent. in 1896 in the mortality of laryngeal cases.

Table VI. shows that the percentage of laryngeal cases which came to tracheotomy, fell from 56 to 40,—an exceedingly satisfactory result, bearing out the statement I made earlier in the paper as to our clinical impressions that antitoxin cut short many laryngeal cases.

Table VII. shows the great improvement in the results of

tracheotomies—from a mortality of 70·4 per cent. to 42·5 per cent. And I may add, that at my own hospital at Tooting last year, the tracheotomy mortality was only 29·1 per cent.

Lastly, the question of complications, which has to be considered under two heads:—

- (1) Complications usually associated with the disease.
- (2) Those probably connected with antitoxin.

Of No. (1) the only complications we need consider are—

Albuminuria ;
Nephritis ; and
Paryses of various kinds.

Table VIII. shows a considerable rise in all of them except nephritis, which in 1895 rises, and in 1896 falls again lower than before.

The explanation of the apparent increase in the albuminurias is, I think, undoubtedly the much greater care in noting the faintest cloud of albumin, which formerly was hardly regarded unless it amounted to a distinct deposit.

Nephritis is certainly not caused by antitoxin, as many opponents of its use have asserted it is. Post-mortem examinations prove this conclusively.

(2) Complications probably connected with antitoxin are chiefly—

Rash ;
Joint-pains ;
Pyrexia ;
Abscesses.

Of these, the rash is most common. It is usually an urticaria, more or less general over the body and limbs. It may, however, be scarlatiniform, or of a rötheln or morbilliform type, and give rise to questions of diagnosis.

It usually appears about nine days after injection: occasionally it appears at the site of injection only, and sometimes here within a few hours or so, instead of nine days.

I have never seen any mention of a secondary rash appearing six to nine days later than the primary one. This, more of a crescentic, macular appearance, was with me of not infrequent occurrence.

The rash is often attended by more or less pyrexia, which persists for several days; and there is often at the same time an enlargement of the glands of the neck, and an increase in the amount of albumen in the urine.

Joint-pains and abscesses do not call for much comment. The former are rarely serious or persistent. The latter appears, with the strictest antiseptics, to be unavoidable at present. Doubtless more perfect preparation of the serum will still further diminish the risk of abscess, but the septic element in the patient himself must not be lost sight of.

Table IX. shows the percentage of cases treated with anti-toxin which developed these complications.

Taken altogether, smaller doses of more potent serum have rendered all these complications less serious. They are certainly no risk to life, and practically not worth considering, taking into account the value of the remedy.

No doubt it is a difficult thing to say where albuminuria ends and nephritis begins, but in the Metropolitan Asylums Board we took the presence of blood as the distinguishing point, and I do not know that a better distinction can be made.

As to the increase of paryses, these being especially cardiac failures, the explanation is, that lessened mortality, or even mere prolongation of life, means more cases to get complications. The cases do not die at once; they are tided over for a few days, and time for the degenerative-nerve changes to proceed is allowed, from which the patient eventually dies.

The injection of antitoxin may stop the further manufacture of toxin, but the systemic infection has gone so far that recovery cannot take place. Another argument for early commencement of treatment—before the nerve changes have time to develop at all.

In conclusion we may tabulate:

I. The clinical effects of the treatment:—

- (1) An improvement in the general condition and aspect of the patient.
- (2) An improvement in the local condition.
 - (a) Diminished glandular and faucial swelling.
 - (b) Extension of membrane ceases.

- (c) Earlier separation of membrane. This has been proved by actual records kept before and since antitoxin was used.
- (d) Diminution, and soon complete cessation of the foul rhinorrhœa.
- (3) A similar improvement in laryngeal cases, evidenced by diminution in difficulty of breathing, and by actual recovery in many cases without operation, which would previously have required it. Moreover, a marked improvement in the course towards recovery of operation cases.
- (4) A prolongation of life in cases which terminate fatally = $1\frac{1}{2}$ –3 days.
- (5) No definite effect on pulse or temperature.

II. Statistical results, in the words of the Antitoxin Report:—

- (1) A great reduction in the mortality of cases brought under treatment in the first three days of illness.
- (2) The lowering of the combined general mortality to a point previously not attainable.
- (3) The still more remarkable reduction in the mortality of the laryngeal cases.
- (4) The uniform improvement in the results of tracheotomy.

In fact, "a remedy of much greater value in the treatment of diphtheria than any other yet introduced."

Note.—Since this paper was read, Dr Hugh R. Jones has been good enough to work out with me the 'possible error' in the tables of statistics. It comes out an exceedingly small one: 3 per cent. in Tables II., III., and III.A, and 4 per cent. in Tables I. and II.A, for cases under 5 years of age; and presumably less therefore still for all ages.

It will be remembered that the improvement from the use of antitoxin in cases under 5 years of age was 17 per cent., and the error, therefore, may reduce this to 13 per cent., but, on the other hand, it may improve it to 21 per cent.

STATISTICS FROM THE HOSPITALS OF THE METROPOLITAN
ASYLUMS BOARD.

TABLE I.—All Cases treated in 1894.

DAY OF DISEASE.	1st.		2nd.		3rd.		4th.		5th and after.		TOTAL.		Mortality per cent.
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Under 1	0	0	10	7	4	1	11	6	15	11	40	25	62·5
1 to 2	10	5	42	29	47	25	39	25	66	42	204	126	61·7
2 to 3	16	7	55	27	51	22	44	26	91	50	257	132	51·8
3 to 4	17	6	58	26	70	37	71	37	126	56	342	161	47·0
4 to 5	15	4	51	18	71	26	47	14	144	50	323	112	34·1
5 to 10	53	6	179	34	215	71	208	60	420	109	1076	280	26·0
10 to 15	12	2	85	4	79	8	59	5	22	22	363	41	11·2
15 to 20	6	0	23	0	33	1	28	0	70	6	160	7	4·3
20 and upwards	4	0	36	1	82	1	59	6	92	10	273	18	6·5
Total	133	30	539	146	662	192	566	179	1152	355	3042	902	29·6
Mortality per cent. . . .	..	22·5	..	27·0	..	29·4	..	31·6	..	30·8	..	29·6	..

TABLE II.—All Cases treated in 1895, both with Antitoxin and without.

DAY OF DISEASE.	1st.		2nd.		3rd.		4th.		5th and after.		TOTAL.		Mortality per cent.
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Under 1	2	1	18	8	9	6	7	1	20	8	56	24	42·8
1 to 2	9	2	45	17	48	20	38	23	88	52	228	114	50·0
2 to 3	14	6	48	6	65	30	57	19	100	39	284	96	33·8
3 to 4	26	6	63	11	102	22	87	31	169	66	447	136	30·4
4 to 5	14	1	76	12	80	17	106	41	162	56	438	127	28·9
5 to 10	42	8	222	20	263	58	234	62	506	114	1267	247	19·4
10 to 15	15	0	83	2	87	10	88	4	151	19	424	35	8·4
15 to 20	3	0	26	2	41	1	24	2	58	6	152	11	7·2
20 and upwards	8	0	41	0	49	0	51	1	89	5	233	6	2·5
Total	128	15	622	78	744	164	602	174	1343	365	3529	796	22·5
Mortality per cent. . . .	..	11·7	..	12·5	..	22·0	..	25·1	..	27·1	..	22·5	..

TABLE III.—All Cases treated in 1896, both with Antitoxin and without.

DAY OF DISEASE.	1st.		2nd.		3rd.		4th.		5th and after.		TOTAL.		Mortality per cent.
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
Under 1	5	1	11	7	16	5	13	4	36	20	81	37	45·6
1 to 2	0	0	40	18	47	20	48	28	103	43	240	109	45·4
2 to 3	2	0	54	9	76	22	65	24	185	62	388	119	30·6
3 to 4	10	0	74	12	105	26	98	23	221	82	508	143	28·1
4 to 5	9	0	74	8	107	20	114	31	265	74	569	133	23·3
5 to 10	37	1	216	17	287	47	298	61	670	147	1508	273	18·1
10 to 15	11	0	67	2	83	4	96	12	236	26	493	44	8·9
15 to 20	1	0	9	0	28	1	33	2	63	5	134	8	5·9
20 and upwards	1	0	22	0	74	1	57	0	100	4	254	5	1·9
Total	84	4	567	73	823	146	822	185	1879	468	4175	871	20·8
Mortality per cent. . . .	..	4·7	..	12·8	..	17·7	..	22·5	..	24·6	..	20·8	..

TABLE II.A.—*Cases treated with Antitoxin, 1895.*

DAY OF DISEASE.	1st.	2nd.	3rd.	4th.	5th and after.	TOTAL.	Mortality per cent.
AGES.	Cases.	Cases.	Cases.	Cases.	Cases.	Cases.	Deaths.
Under 1	1	0	10	8	5	13	7
1 to 2	10	2	37	18	40	65	42
2 to 3	9	0	38	5	42	39	16
3 to 4	16	2	46	8	64	17	26
4 to 5	10	0	54	8	50	61	25
5 to 10	80	0	145	18	170	159	45
10 to 15	10	0	53	2	44	6	46
15 to 20	0	0	7	1	12	1	12
20 and upwards	0	0	13	0	19	0	19
Total	86	4	408	60	449	118	453
Mortality per cent.	..	4·6	..	14·8	..	26·2	..
						33·1	..
						35·7	..
						38·1	..
						38·1	..

TABLE III.A.—*Cases treated with Antitoxin, 1896.*

DAY OF DISEASE.	1st.	2nd.	3rd.	4th.	5th and after.	TOTAL.	Mortality per cent.
AGES.	Cases.	Cases.	Cases.	Cases.	Cases.	Cases.	Deaths.
Under 1	2	0	10	6	13	3	10
1 to 2	2	0	35	16	41	16	37
2 to 3	7	2	39	8	60	18	56
3 to 4	7	0	61	8	83	20	61
4 to 5	5	0	61	6	77	17	88
5 to 10	27	1	157	16	212	44	232
10 to 15	7	0	33	1	47	8	53
15 to 20	0	0	3	0	8	1	6
20 and upwards	0	0	7	0	16	0	23
Total	57	3	406	61	567	122	579
Mortality per cent.	..	5·2	..	15·0	..	21·9	..
						27·8	..
						31·7	..
						31·7	..
						35·9	..

TABLE IV.—*Showing by Reduced Percentage Mortality the Advantage of Early Commencement of Treatment with Antitoxin.*

DAY OF DISEASE.	1894. Mortality per cent.	1895. Mortality per cent.	Difference from 1894.	1896. Mortality per cent.	Difference from 1894.
1st	22·5	11·7	10·8	4·7	17·8
2nd	27·0	12·5	14·5	12·8	14·2
3rd	29·4	22·0	7·4	17·7	11·7
4th	31·6	25·1	6·5	22·5	9·1
5th and over	30·8	27·1	3·7	24·6	6·2
Total	29·6	22·5	7·1	20·8	8·8

TABLE V.—*Showing Comparative Mortality of Laryngeal Cases.*

Year.	Cases.	Deaths.	Percentage Mortality.
1894	466	289	62·0
1895 (First Antitoxin Year) . . .	468	196	41·8
1896 (Second Antitoxin Year) . . .	462	143	30·9

TABLE VI.—*Showing Comparative Number of Laryngeal Cases requiring Tracheotomy.*

Year.	Cases.	Tracheotomies.	Percentage of Tracheotomies.
1894	466	261	56·0
1895 (First Antitoxin Year) . . .	468	219	46·8
1896 (Second Antitoxin Year) . . .	462	188	40·6

TABLE VII.—*Showing Percentage Mortality of Tracheotomy Cases.*

Year.	Cases.	Deaths.	Percentage Mortality.
1894	261	184	70·4
1895 (First Antitoxin Year) . . .	219	108	49·3
1896 (Second Antitoxin Year) . . .	188	80	42·5

TABLE VIII.—*Showing Percentage of all Cases having Complications usually associated with Diphtheria.*

Complication.	1894.	1895.	1896.
Albuminuria	24·1	41·5	53·4
Nephritis	1·2	1·6	0·5
Paryses	13·2	26·7	21·3

TABLE IX.—*Showing Percentage of Cases having Complications probably connected with Antitoxin.*

Complication.	1895.	1896.
Rash	45·9	35·2
Joint-Pains	4·7	6·5
Pyrexia	29·6	19·8
Abcesses	2·3	1·2

Dr N. E. ROBERTS remarked on the relatively small number of cases of diphtheria in our hospital as compared to London. He agreed that the serum treatment had reduced the mortality, especially in laryngeal cases, although the expectations of the earlier days were not fulfilled. His figures were really too small to be of much value, but, such as they were, they supported Dr Manby's views. The mortality had come down from 35 per cent. in 1894 (14 cases) to 21·1 in 1896 (90 cases); and in laryngeal cases calling for tracheotomy, whereas the 3 cases operated on in 1894 died, in 1896 14 cases gave 8 recoveries, equal to a mortality of 42 per cent. He regretted that Dr Manby had not made reference to post-scarlatinal diphtheria,—a form almost unknown in this city, fortunately.

Dr HOPE attached greater importance to careful observation than to deduction to be drawn from statistics. In a question of this kind, he considered that the value of Dr Manby's paper largely rested on personal observation. Although, happily, diphtheria was relatively much less prevalent in Liverpool than in London, the Hospital Committee of the City Council had made provision for a gratuitous supply of diphtheric antitoxin.

Dr BLAKEMAN said:—Although antitoxin has no doubt decreased the death-rate of diphtheria, at the same time a great many cases of a mild type, shown by bacteriological examination to be true cases of diphtheria, have also been added to statistics, which in days before antitoxin and bacteriological examination of the throat would have been excluded from the diphtheria statistics, and put into a class of their own, as mild sore-throat, tonsillitis, etc., and that these mild cases have also helped to lessen the death-rate.

THIRD ORDINARY MEETING, HELD 4TH NOVEMBER 1897,—
Dr RICHARD CATON, President, in the Chair.

Dissecting Aortic Aneurysm.

DR GLYNN narrated the case of a man aged 34, who died of dissecting aneurysm of the aorta. He also exhibited the specimen, which showed that the whole of the thoracic and abdominal aorta was involved. The patient had suffered from infective endocarditis at the age of 14, and had since been the subject of aortic regurgitation. During life the symptoms of mitral stenosis were present, but, post-mortem, no mitral stenosis was found. The man died from the dissecting aneurysm rupturing into the pericardium.

Dr A. C. E. HARRIS and Dr CARTER made comments on the case.

Fatal Case of Thyroidectomy.

MR PAUL read a case of partial thyroidectomy for parenchymatous goitre, which ended fatally two and a half days after operation for thyroidism. From this and other cases he concluded that the symptoms described were due to the absorption of an excessive amount of thyroid secretion through the wound, and advised that the gland should be handled gently during the operation, and that the isthmus should be ligatured before being severed. If still the symptoms supervened, the wound should be laid entirely open, irrigated, and filled with dry antiseptic wool or gauze, which must be changed as often as moist.

Dr ALEXANDER and Mr RUSHTON PARKER made some remarks.

Nitrogen Excretion in Sporadic Cretinism.

DR ABRAM read notes of the case of a girl aged 14, who had suffered from cretinism for about two years. He administered

thyroid extract for six weeks, in which time the patient increased 1½ inches in height. He considered that the administration of thyroid extract increased metabolism, as shown by the larger excretion of nitrogen.

Dr CARTER remarked that if waste from any cause occurred, such as excessive labour, etc., the output of nitrogen was immediately increased. This child, like all other myxedematous patients taking thyroid, lost weight; but he was unable to see that the determination of the total nitrogen proved that the action of the thyroid on metabolism was direct, any more than the mere fact of loss of weight proved it.

Dr STANLEY GILL, Dr GLYNN, and Dr P. DAVIDSON made comments upon the case.

The Immediate Obliteration of Deformity in Pott's Disease.

MR ROBERT JONES read a paper on the immediate obliteration of deformity in Pott's disease, and said:—In bringing this subject before the notice of the profession, I must first point out that, so far, it is too early to be dogmatic. Certain facts, however, quite opposed to traditional doctrine, deserve to be made known. Whether in an early or a late stage, the care of cases of spinal caries is always an anxious one; for, no matter how assiduous one's efforts, it is only on rare occasions that one can prevent or obliterate deformity. Nearly every surgeon can point to cases, few and far between, in which the hump has grown but little, but even in these one must admit that the success of treatment has been due to the situation of the caries, and to its limited distribution rather than to the surgeon's art. In the writings of the old surgeons, references, more or less vague, are found to forcible methods for straightening backs. It is difficult to make out, however, whether they allude to Pott's disease, to lateral curvature, or to fracture

dislocations. In 1647 Ambrose Paré writes a chapter under the head of "How to Restore the Spine Outwardly Dislocated," and says, "The vertebræ outwardly dislocated, when as they stand bunching forth, then is it fit to lay and stretch forth the patient upon a table with his face downwards, and straitly bind him about with towels under the armpits and about the flanks and thighs; and then to draw and extend, as much as we can, upwards and downwards, yet without violence; for unless such extension be made, restitution is not to be hoped for, by reason of the processes and hollowed cavities of the vertebræ, whereby, for the faster knitting, they mutually receive each other. Then must you lie with your hands upon the extuberances, and force in the prominent vertebræ. But if it cannot be thus restored, then will it be convenient to wrap two pieces of wood, of four fingers long, and one thick, more or less, in linen cloths, and so to apply one on each of the dislocated vertebræ, and so with your hands to press them against the bunching forth vertebræ, until you force them back into their seats, just after the manner you see it before delineated."

However, I think that Ambrose Paré referred to some other disease than caries; for in a later chapter, speaking of dislocation of the spine from internal causes, he says, "scarcely any recovers from this disease, for many reasons, which any exercised in the art may easily think upon." In searching amongst the ancient writers, I find that Pott's disease is described by them, without, of course, any knowledge of its nature, and it is generally known as *Gibbositas*. Albucasis draws attention to it, and recommends the use of the actual cautery, and most of his successors advise a drain, and that this be made by fire. The Egyptians were very partial to the application of "*linum crudum*," which, when placed on the part in the form of a pyramid, was set fire to, and produced an eschar. Hippocrates makes more detailed reference to forcible reduction; for he says, "The patient being laid on his back, a leather bottle, not inflated, was placed under the deformity and blown up by an assistant with a forge bellows, but this effort was not successful." Later Gillibert de Hercourt Arrison Joerg, quoted by Menard, kept the patient on his back and applied

extensive apparatus and counter-extension, and also applied pressure on the hump. Percival Pott has practically no recourse to mechanical methods except a go-cart and crutches; but, improving upon a hint derived from Hippocrates (who spoke of a paralysis of the lower limbs being cured by an abscess which occurred in the loins), he advocated the employment of issues.

I believe that Sir James Earle, in a pamphlet which I have failed to procure, did advocate the immediate reduction of the hump; but in his monograph "On the Cure of the Crooked Spine" he merely suggests the advantages of mechanical support.

I am quite justified in assuming that at all times surgical tradition has been opposed to forcible methods; and that the cases now reported, apart from perhaps isolated instances, are the first performed in this country, and that their treatment is based, with certain modifications, upon lines quite recently advocated by Calot, of Berck-sur-Mer. My friend, Mr Tubby, was associated with me in the performance of the first operations.

I wish in this paper to supply a few practical hints, which will perhaps be useful to surgeons desirous of practising the reduction of deformity, rather than to advocate this novel treatment; and, moreover, to place on record the immediate results obtained in over fifty cases. Amongst the fears which have influenced surgery in the past against any active manipulations of tuberculosis of the spine, one would prominently place those of pressure paralysis, abscess, and dissemination of tubercle. Of these, that of paralysis would be the most general, and yet I think this fear would be modified when we remember that palsy is rarely the result of bony pressure. One cannot find a definite relationship between the presence of deformity and paraplegia. Motor paraplegia, affecting both lower extremities, at times the bladder and rectum, and occasionally the upper extremities, may come on before the bony deformity, with the deformity, or comparatively late in the disease. It is generally due to thickening of the membranes of the cord, from

the contiguity of the inflammation in the bone, or to an actual infiltration of tubercular material.

In his lectures on the Surgery of the Cord, Thorburn says, "The exact *modus operandi* of this pressure is still open to question. The School of Charcot attributes the mischief to myelitis, spreading from the point of pressure across the cord; but most recent observers do not accept this view, and it is certain that pressure alone (without myelitis) may cause paraplegia. The simplest explanation of such a condition would be, that the pressure causes anaemia, and subsequent degeneration of the cord; and in some cases we find the latter thinned and firm in texture, as if this were the true explanation. . . . Others find that oedema and swelling of the cord are more common than constriction; and this condition is generally attributed to an extra-medullary compression of veins and lymphatics, causing congestion and lymph stasis."

Paraplegia occurs most frequently when the disease is in the upper dorsal region, and bears no relation to the acuteness of the angle. Sometimes it disappears whilst the bony deformity is still increasing. Deformity appearing in early life is sometimes quiescent for years, and then paralysis may supervene. These facts have obviously an important bearing on the question of forcible reduction. One knows that the danger of abscess may be easily exaggerated. I have been accustomed for many years to forcibly reduce deformity in cases of surgical tuberculosis occurring elsewhere; and in a very large number of cases so treated, I can recall but few in which abscess may have been induced. There is no doubt that constant irritation and slight movement are much more likely to cause inflammatory mischief than forcible correction, followed by complete rest. It is difficult to speak with accuracy on the question of dissemination of tubercle. Tubercle may attack other organs during any stage of treatment. In my own practice, however, I have never been able to trace such dissemination to breaking down adhesions in tubercular cases. The process which takes place in cases of abscess, and in the case of dissemination of tubercle when occurring in other joints, will probably be the same in cases of

spinal caries; and, in the light of the report which I publish, this will gain additional probability. We are very apt to forget the numberless complications which naturally arise during the most classic method of treatment in spinal tuberculosis,—complications which we should never dream of ascribing to the means employed.

Whatever method be employed, paralysis is bound to appear in a given number of cases. Myers has analysed 1570 cases of Pott's disease, and he found of this number that 270 became paralysed,—16 in the cervical region, 12 in the cervico-dorsal, 105 in the dorsal about the eighth, 40 in the lower dorsal, 19 in the dorso-lumbar, 18 in the lumbar, and 9 not stated. The average duration of paralysis in which recovery took place was 12 mos. in the cervical region, 9½ in the upper dorsal, 6 in the lower dorsal, and 8 in the lumbar. Eighteen of 218 cases had repeated attacks of paraplegia. The average duration of disease before the onset of paralysis was 13 mos. in the cervical, 2 in the upper dorsal region, 15 mos. in the lower dorsal, and 18 mos. in the lumbar. In an analysis of 280 cases which I made a few years ago, I found paralysis occurred in 8 per cent. And so, again, with regard to abscess. Townsend found that of 380 cases of spondylitis, 75 became complicated with abscess, the distribution being 8 per cent. cervical, 20 per cent. dorsal, 72 per cent. lumbar.

These statistics appear to demonstrate the fallacy of concluding that when paralysis or abscess appear after forcible reduction, as by the law of averages they must do, such complications are the result of operative procedures. Unfortunately they are merely symptoms inseparable from the disease. I mention, as an instance of the difficulty of accurately compiling statistics, that the other week I sent for seven patients to enter hospital to have their spines straightened, and five of them appeared. Some days later I saw the father of one of the children who failed to come, and asked him why he did not respond to the call. "Oh," he said, "Harry lost all power in his legs the night before."

In the other case an abscess developed the following week. Had these two results immediately followed the operation, they

would certainly have been ascribed to it. The filling in of the gap between the bodies of the vertebræ presents, to my mind, a more serious fear than that of paralysis. It is certain that if an extensive projection has been corrected, a good deal of new bone will be required to maintain the solidity of the column. It is one thing to reduce the deformity, another to so completely cure it as to render a return impossible. This doubt acquires more weight when it is remembered how prone tubercle is to ankylosis of a fibrous nature in joints. Separate 1½ inches the bodies of the vertebræ, and secure fibrous buttressing, and there is nothing to prevent the return of the kyphos as soon as the splint is removed. So far as my own cases are concerned, sufficient time has not yet elapsed to speak with any authority : at least two or three years must needs pass. Calot refers to nine or twelve months as the time requisite to complete a cure, but I think you will all share with me the opinion that tubercle, as we meet with it in England, is not nearly so tractable a disease.

From an analysis of my own cases of tubercle in spines, from two to three years bears a nearer approach to accuracy. The pathology of the affection, however, favours bony rather than fibrous ankylosis. In the museums there are many specimens showing the firm osseous ankylosis which joins distant bodies, but I have never seen a case in which fibrous union intervened. In some instances the angle certainly seems fixed by strong buttresses and adventitious plates. Did this not occur, spinal deformities would be far more common and progressive than they are. In the large joints, where ankylosis is very frequently fibrous, the granulation tissue is derived from the remains of the synovial membrane and other soft tissues, and it becomes insinuated between the bones. In the vertebræ, however, the bony elements are derived from the neural arches, the intervertebral discs having disappeared.

In the obliteration of a hump, there are such manifest advantages that one would almost feel justified in running a risk. Putting aside æsthetic reasons, which are cogent, and also the dislodgment and cramping of organs, which at times gives rise

to serious complications, we cannot help remembering that the position of the column above the angle is such as to always tend towards the increase of deformity. Unless we insist upon the recumbent position we cannot ensure efficient fixation, and lying upon a sharp flexion angle is next to impossible. On the other hand, with a straight spine, fixation becomes very simple.

In performing the operation, I decided to undertake any case that presented itself, unless very strong reasons appeared to the contrary. In some of the cases the patients were comparatively robust, in others they were weak; some were stout, others emaciated. Out of 52 cases, two deaths occurred: in one, which had fits five weeks after operation, the patient was a private one, and no post-mortem was allowed; and in the other, the child died under circumstances upon which a smuggled, imperfectly performed post-mortem shed little light.

The patient in question came to me from a distance. She was wan-looking, and small for her years. On being brought into the theatre, I noticed that she had a rash on her, not unlike that of scarlet fever. She was accordingly sent back to the ward, and isolated. The rash, however, disappeared the same day, and did not appear until the morning of operation in the following week. This time no regard was paid to it, and reduction was effected. The vertebrae involved extended from about the sixth to the ninth dorsal. There was no difficulty in the reduction, and she was placed in a plaster corset. For three days she remained quite well, and then her temperature rose to 100, and her pulse became a little rapid. As she was constipated, I ordered some calomel, and for two days her bowels were very relaxed, and she vomited several times. On the fourth day the vomit was stercoraceous; and fearing that some intestinal adhesions to the spine might be found, I performed an exploratory abdominal section on the sixth day. Nothing abnormal was to be seen or felt, and the wound was closed. The vomiting continued, and the temperature rose to 102, and in twenty-four hours the little patient expired. Unfortunately, I was not present when the post-mortem was made, or I might have managed to secure

the specimen. The abdominal organs were healthy; there was no discolouration or distension of bowel, and no obstruction.

Peritonitis and adhesions to the spine were both absent. The bodies of the vertebrae could be distinctly felt. There was thickening in the neighbourhood of the curvature, but no tearing of soft tissues in front, and no collections of blood or of pus. The mesenteric glands were enlarged, and, on section, proved to be tubercular.

The cause of death was therefore left in obscurity.

Having determined to forcibly reduce the deformity in a case of Pott's disease, it is necessary to carefully prepare our patient, more especially if the plaster corset recommended by Calot be applied. For two or three days previously the patient should be dieted with a view to supplying nourishment and avoiding waste concretions. The bowels should be thoroughly well opened, so that if necessary abdominal pressure may be applied by the hand without risk; and for the same reason, the bladder should be empty. It is hardly necessary to state that the skin should be deodorised and disinfected, and that the head should be shaved. In order to avoid insect life, the scalp should be treated for a sufficient time. An assistant should now prepare the traction bandage. This consists of two linen bands a yard long. The centre of one piece is placed round the occiput, the centre of the other round the chin. They meet beneath the ear on each side, and at this point are firmly fixed by safety-pins. The free ends are knotted, and an assistant takes a loop in each hand, or, more conveniently still, the loops may be attached to a cross-bar of wood or other material. The linen bands must be of equal length, otherwise the head is not pulled in line with the spine. They should be fully a yard long, in order that the assistant who controls the head may be well out of the way of the anaesthetist. This traction is quite essential, as one cannot act upon the spine by manual grasp upon the head for any length of time. In addition to the assistant who controls the head, six others are needed: two for the arms, two for the legs, one for chloroform, and one to directly assist the operating

surgeon. Chloroform having been administered, at a given signal traction must be exercised. If the patient be small, he need not be supported by chest or pelvic rack. A child of $2\frac{1}{2}$ years requires a pull of 220 kilos before the neck is dislocated. Traction, therefore, measured if necessary by the dynamometer, should be well within that strength. Roughly speaking, five men, pulling with a force that soon tires, rarely exceed 70 kilos, so that the danger of dislocation is very slight. All, however, should pull together, and there should be no jerk. This applies more especially to the assistant who controls the head. Simple traction will reduce the deformity in a large number of cases, particularly in curvatures situated high up. If it does not, direct pressure must be applied to the hump. An assistant places his hand upon the abdomen with sufficient power to feel the bodies of the vertebræ, and it is to anticipate this pressure that I have advised a careful diet and an empty bowel. This pressure on the vertebræ from the front is a check upon the surgeon who presses directly upon the hump, and who uses sufficient force to reduce the deformity, if he can do so with safety. In a large number of cases the pressure required is very great, and sometimes the reduction is accompanied by crackling heard all over the theatre. In very early curves only is reduction absolutely complete : by this I mean, that no trace of thickening remains. In the more mature deformities, the curve is reduced by fully three-fourths its bulk either in one, two, or three sittings. I think it is prudent, in the case of very pronounced curves, to reduce them in two or three stages, rather than at one sitting. This is more especially the case if the effort be accompanied by much crackling, or if there be much resistance. My experience in the reduction of articular deformities favours the division of such operations into stages; for whenever one has to deal with a flexion deformity of many years' standing—take the hip, for instance—at the first sitting, with much difficulty, we may only partially reduce it, but on maintaining for a week or a fortnight this reduction, one can with much less force complete the operation. This also applies to the spine. Less force is needed when we resume operations after a short interval than

would have been necessary had we endeavoured to complete matters at the same sitting.

Calot and Redard, who have alone to any extent practised this method in France, use the plaster of Paris corset, so applied, they argue, as to maintain the extension by means of a direct pull upon pelvis and occiput. The plaster corset of Calot is applied in the following manner :—

The surgeon places an assistant to keep up pressure on the lately prominent vertebræ. This pressure is to be maintained during the application and drying of the plaster corset. Strips of wadding are placed to interlace one another at the level of deformity; then the chest, abdomen, and head are covered by cotton-wadding bandages, to the thickness of about an inch. Plaster bandages are then rolled round, and so arranged as to make powerful compression upon the deformity, extension of the spine being kept up during this time. The bandages should be soaked in hot water to ensure their drying rapidly. In order to complete the cervical and cranial part of the apparatus one can leave the child in the horizontal position, but it is simpler to effect whilst the child is suspended with the head erect on the ordinary apparatus. The child therefore hangs by suspension strips, which I have described, whilst the surgeon rolls the plaster bandages around the neck and head, only leaving the face exposed from the eyebrows to the chin.

Personally, I have no affection for this huge, cumbersome apparatus, which requires so much trimming when applied, and which, if quite effective, is rarely comfortable for long. It is supposed to last for six months, but makes no provision for growth, and in six weeks is usually infested by vermin. To those who intend to use it, however, I should recommend certain modifications, to which I have already hinted.

Disinfect the patient, shave the head, use tarry tow instead of cotton-wadding, and apply pressure on the hump by means of boiler-felt. These precautions will tend to modify the sickening contents of the corset lining. In my mind, however, these do not complete the objections, for it is most difficult to avoid pressure sores over the prominent vertebræ, and the cost and

trouble of the apparatus produce no balancing good. Again, I very much doubt whether extension of the spine is maintained by Calot's apparatus without producing so much discomfort that the child would not tolerate it. I must add to these objections the very serious one that would be sure to face us should there be any difficulty during the administration of chloroform. Those of us who have had to take one of these corsets off will realise the danger of the delay which would occur at such a time.

I believe that hyper-extension is a much more important factor in the prevention of Pott's curvature than any traction that can be tolerated, and so have modified the Thomas's double hip-splint in such a manner that when the patient lies upon it the bodies of the vertebrae cannot possibly fall one upon another. In this manner superincumbent body-weight, with its attendant evils, is avoided. Patients are comfortable and clean, the spine can be watched, and from time to time pressure can be suitably modified; and last of all, an immensity of labour is saved.

Although in most cases one notices a tendency to the recurrence of the curve, which is, after all, but slight, and may easily be overcome by slight traction, it merely means that we cannot by any apparatus maintain the traction which is necessary for the complete reduction of a deformed spine.

One drawback to the method of forcible reduction is its cost. If we have to engage seven or eight assistants every couple of months, the limitation to its utility is assured. In one or two photographs which I have taken, a rack is shown which I devised in order to diminish the number of assistants.

This requires some slight modifications, and will then, I think, effect its purpose. A simple method of extension, tested by dynamometer, could be arranged by applying pulleys to the feet and fixing the head to a horizontal bar, with two body-racks to facilitate bandaging, but these are technical details which time will perfect.

In many cases I have operated without chloroform because I feared an accident; and although I have been lucky enough not

to have had grave trouble, yet some of the cases have given me trying moments. In most cases I have performed the second operation without it, and in no case does the pain appear to have been very great. Redard, in his pamphlet, refers to having reduced a hump of two years' standing. From this one gathers that he would have excluded many of the cases in which the deformities are of far older standing. Further experience is needed to decide where we cross the line of prudence. It is, however, more than satisfactory to note the absence of serious immediate consequences in such advanced cases. Out of 50 cases, 28 were males and 22 females, and their ages ranged from 18 months to 22 years. The curves had existed from 6 months to 6 years, and 8 of the little patients had already recovered from one or more attacks of paraplegia. Five had paraplegia at the time of operation, and 3 of them recovered after operation, and apparently as the result of operation. A fourth was very much improved. Many of the cases had been complicated with abscess, but in 1 only did I operate while abscess was present. Nineteen out of 50 cases gave a distinct history of injury. Two of the curves were in the cervico-dorsal region, 39 were in the dorsal, 6 in the dorsal-lumbar, and 3 in the lumbar. Of the reductions, 33 out of the 50 were completed at the first sittings, and of the rest it might be said that either other operations were required, or I thought it inadvisable to use sufficient force to completely overcome the hump. It is interesting to note that three cases of paraplegia were very much benefited by the reduction, and that in another case, in an adult, in which there was loss of sensation, this returned over a large area. In not one instance was there any immediate complication, such as paralysis; and with the exception of one death, no serious effect has followed.

The curves one finds best suited for this method are, (*a*) those occurring in the young, (*b*) those in which the disease is active, and (*c*) those in which the angle of deformity is changing. In the case of young children slight traction often suffices: and less force is needed where disease is active, when the consolidating processes have nearly ended. One has reason to hope

that an angle which is increasing more rapidly than the rate of growth can account for, can with tolerable facility be reduced. I have avoided curvatures in the cervical region, with one or two exceptions, for reasons which will not require emphasising. Through the kindness of Mr Murray, who has had some experience of this method, I have obtained a very good pathological specimen. Mr Murray performed a post-mortem reduction in a child, the subject of spinal caries, who had died from some other disease. This specimen he afterwards handed over to me. For the report of this specimen, I am indebted to Mr Thelwall Thomas :—

It exhibits a cavity opening on the right side, formed by separation of the bodies of the vertebræ, occupying the area usually devoted to the body of the first dorsal vertebra and a portion of the seventh cervical. The opening leading into the cavity measures 1 inch in its long diameter, proceeding from behind and above, downwards and forwards, and 1 inch across. The depth of the irregular cavity is $1\frac{1}{2}$ inches, the walls consisting of fractured cancellous bone, with pieces here and there of epiphysial cartilage torn off the bodies of the vertebræ; posteriorly, the spinal cord is exposed for $1\frac{1}{2}$ inches surrounding its intact dura mater.

The damage to the column appears to be laceration of the right longus colli muscle, with partial tearing of the right side of the anterior common ligament; irregular fracture of deceased bodies of vertebræ, the 1st dorsal and 7th cervical bodies being almost if not entirely missing.

The capsular ligaments binding the articular processes (on the right side) of the upper and lower facets of the 6th and 7th cervical vertebræ are torn through, exposing the cartilage covering articular processes.

The left longus colli is intact.

The force therefore appears to have been expended on the right side of the column, sparing the soft tissues on the left.

Although I have successfully reduced ankylosed vertebræ, I think that it is a much more dangerous operation than where the ankylosis is not complete, and I think it is my duty to

fully explain the dangers of this proceeding to the patient before operating. If, however, we decide to operate upon an ankylosed case and succeed, recovery will be much more rapid than in the case where active disease is present. I do not think it is wise to operate in cases in which large lumbar abscess exists, and this not so much because of the abscess as on account of the difficulty in maintaining a hyper-extended recumbent posture in the face of such complications. Psoas abscess, however, would not deter me. The mid-dorsal curves are most easily reduced, because of the excellent leverage which they permit. Curves involving several vertebrae are more easily reduced than those affecting only a few. I have very rarely had to press my hardest upon big curves, but on several occasions small knuckles have obliged me to put forth my utmost force. The age of the patient is not of so much importance as the duration and character and location of the disease. I should not hesitate to attempt the reduction of any deformity occurring in early manhood, provided only that the angle was a changing one, or the disease of short duration.

In conclusion, I cannot but feel pleased that so few disasters have followed the performance of so many operations; and although we cannot yet predict ultimate results, we now know that the spinal column is not too sacred to be touched. The most important lesson, however, I have to impart is, that deformity in the future can be easily averted by fixing the column in a position of lordosis, whereby vertebral bodies cannot unduly press upon each other.

In addition to the 50 cases already reported, some 20 others have been operated upon. One other death occurred, making 2 deaths in 70 cases. Details of this case will be reported at some future time. The cause of death was meningitis, and, as far as one could see, had no bearing upon the operation.

[TABLES.

ANALYSIS OF CASES.

No.	Name.	Sex.	Age.	Duration of Disease.	Location of Caries.	Complications.	History.	Operation.	Remarks.
1	R.	F.	3	1½ yrs.	Dorsal-lumbar, involving about 4 vertebrae. Acute angular flexion.	Tuberular wrist.	A gradual onset—no pain.	Reduced early by exertion, and gentle pressure. No creaking felt during reduction.	Some pain during night, which disappeared next day. No rise of temp., pulse normal.
2	E. C.	F.	4½	1 year.	Dorsal : marked pro- jections involving 4th or 5th mid-dorsal ver- tebrae.	Prominent abdomen.	Fall on back. 3 mos. later walked with rigid spine. Pain and emaciation.	Reduced by manual extension. Considerable pressure required to obliterate defor- mity.	No pain except from applica- tion of corset, which required modifying.
3	F. J.	F.	5	2 yrs.	Dorsal : rounded pro- jection—from 3rd to about 9th dorsal.	Painful and slightly rigid hip.	Gradual onset for over one year.	Reduced by simple manual extension.	Some pain for 24 hours, referred to back. Quite easy the second day.
4	F. L.	M.	4½	2 yrs.	8th to 10th dorsal, not prominent, but patient stands badly (photo).	Very emaciated.	Gradual.	Required considerable pressure to partially reduce. Position much improved.	Complained of corset. Has had measles since. Changed corset for splint.
5	C. K.	F.	5	..	5th dorsal spine (photo and cast).	..	..	Deformity almost obliterated.	Painful for a few hours.
6	E. T.	F.	3	6 mos.	10th dorsal—2 vert. prominent (photo).	..	..	Delicate child. Rickets. Treated in plaster jacket.	Delicate, obliter- ated. Pain for a few hours.
7	M. C.	F.	4	18 mos.	Involving 4th to about 9th. Marked kyphos (photo).	Rickets.	..	Completely obliter- ated.	Very little pain.
8	D. O. T.	M.	8	15 mos.	Lower dorsal and first lumbar—very promi- nent curve (photo).	..	..	History of fall 2 years ago. Deformity re- appearing last 6 mos.	Much improved. 1st operation. Nearly obliterated and opera- tion.
9	A. J.	F.	8	1 year.	Mid-dorsal—prominent curve (photo).	NIL.	..	Fall 12 mos. ago—kyphosis appeared soon after—com- plained of much pain.	Extension and pressure—obliteration nearly complete. Quite com- plete and operation.
10	P. M'K.	F.	12	..	Large kyphos—about 4th, 5th, 6th dorsal (photo).	NIL.	Curve rapidly devel- oped.	Headache for a few hours. No other symptoms.	Headache for a few hours. No other symptoms.

No.	Name.	Sex.	Age.	Duration of Disease.	Location of Curves.	Complications.	History.	Operation.	Remarks.
11	J. S.	M.	8	6 yrs.	Very prominent curve —7th to 12th dorsal (photo).	Dilated abdomen, pigeon chest.	Curve slowly devel- oped—no history of fall.	Considerable extension and pressure—curve nearly gone.	No discomfort—ulcer formed over prominent spine. Slight recurrence of curve, which was overcome 2nd operation.
12	F. I.	F.	9	5 yrs.	Prominence 1st to 5th dorsal.	Abscess in right groin—keratitis.	Gradual onset until 6 mos. ago, when after fall rapidly developed.	Quite comfortable after first evening.	
13	M. J.	F.	7	4 yrs.	Prominent—10th dor- sal to 2nd lumbar.	Paraplegia of right leg complete, par- tial of left—exag- gerated knee jerks.	Fall 4 yrs. ago—walked rigidly with unequal shoulders.	5 days after operation power im- proved, and is now fully re- turned in left leg and partially in right.	
14	J. R.	F.	6	16 mos.	Dorsolumbar—10th to 3rd. Sharp and angu- lar curve.	Fulness in right pel- vis—fluctuant sinus closed for one month left groin.	Gradual onset.	Considerable pressure required.	No pain—3rd day, sinus in left groin discharged—closed on 15th.
15	M. M.	F.	3	1 yr.	Rectangular curve from 6th cerv. to 3rd dorsal (photo).	Nil.	Fall 18 mos. ago—pain increasing stoop—para- plegia since Nov.	Restoration by exten- sion.	Little pain. Paraplegia being rapidly recovered from.
16	W. B.	M.	2½	..	Mid-dorsal curve—pro- minent (photo).	Nil.	12 mos. pain in back— some loss of power in limbs — Prominence first noted 6 mos.	Extension and slight pressure—complete obliteration.	No symptoms—slept soundly first night.
17	M.	M.	6 (?)	4 yrs.	4th to 9th dorsal—very extreme deformity— with acute angle (photo).	Nil.	History of fall—rapid development of de- formity.	1st operation: consider- able pressure and ex- tension, loud crack- ling of spine. Thought wise to postpone fur- ther reduction. 2nd operation: deformity again diminished. 3rd operation: placed in new corset because of skin ulceration.	Only complained of discomfort of corset.
18	S. M.	F.	5	3 yrs.	9th to 10th dorsal—very extreme deformity— angle very acute (photo).	Nil.	Rapid development of deformity during last year. Walks badly— exaggerated reflexes.	Considerably reduced by moderate pressure, with crackling. Still further reduced 2nd operation.	Complained for first few days of corset—then quite easy.

No.	Name.	Sex.	Age.	Duration of Disease.	Location of Caries.	Complications.	History.	Operation.	Remarks.
19	O. T.	F.	5	2 yrs.	4th to 7th dorsal—moderately prominent (photo).	Unable to walk for 2 years. Can only move legs slightly.	Pain lower abdomen 2 yrs. ago—worn a support 12 mos. Prominence noted 18 mos. ago.	Completely obliterated.	In a few days power commenced to return in limbs—now uses them freely.
20	J. M.	F.	4	2 yrs.	6th to 9th dorsal (photo).		Prominence first noted 18 mos. ago. Rapidly increasing deformity. No history of injury.	Almost obliterated.	Comfortable 3 or 4 days. Temp. crept to about 101, started vomiting. Vomiting astercaceous 3rd day. No distension. Suspected dragging of intestine by spinal adhesions. Abdominal section performed—intestines healthy—no adhesions found. Child died in 24 hours. Post-mortem not allowed, but incision enlarged; no distension of gut—no injection—the whole anæmic. No peritonitis or adhesions to spine. Bodies of vertebra distinctly felt. Only slight irregularity of bodies, but thickening in neighbourhood of curvature. No pus—no effusion of blood. Mesenteric glands enlarged and on examination found to be tubercular.
21	J. C.	M.	5	2 yrs.	Dorsal—9th and 10th prominent.	Extension and severe pressure.	Gradual onset—history of several falls.	Very little discomfort. Pains in thighs for two days. No bruising.	
22	H. H.	M.	19	18 mos.	6th to 10th dorsal.	Extension by means of pulleys. Pressure.	Pain in back 18 mos. ago. Prominence noticed 12 mos. ago. No injury. A month before admission gait became unsteady and both legs numb.	6th day, improvement in sensation below knees, 10th day sensation improved at back and sides of thighs. Can move toes of right foot, which could not be done on admission. 40th day, right knee jerk exaggerated—right ankle clonus present. No left knee jerks or ankle clonus.	Slight pain in right leg. Sensation all returned. No affection of legs except right knee jerk.

No.	Name.	Sex.	Age.	Duration of Disease.	Location of Curves.	Complication.	History.	Operation.	Remarks.
23	F. W.	M.	9	4 yrs.	Long dorsal curve 2nd to 10th. Lateral deviation.	Pains in side and abdomen simultaneous.	Fell off donkey 4 yrs. Paraplegia 3 yrs. Slid lasting 4 mos. Went to surgeon's office. Surgeon's jacket. Deformity increasing. Gradual onset. Very little pain.	Extension and pressure, early obliterated but accompanied by crackling noises.	No pain except from corset.
24	A. K.	F.	6	2 yrs.	6th to 10th dorsal moderately prominent.	Nil.	Fall 3 yrs. ago. Noticed prominence soon after. Walks badly. Gradual onset.	Easily reduced by traction and pressure.	Painful for one night only.
25	L. B.	F.	8	3 yrs.	6th to 8th dorsal—marked prominence.	Nil.	Fall 3 yrs. ago. Noticed prominence soon after. Walks badly. Gradual onset.	Traction and pressure succeeded.	Not painful.
26	W. G.	M.	8	6 mos.	6th to 10th dorsal—marked prominent curve.	Anemic child.	Simple extension. Complete reduction.	No pain.	No pain.
27	J. S.	M.	5	yrn.	Very extreme deformity—3rd dorsal to 9th.	Nil.	"Overstrained" lifting a weight. Much middle pain. Pins and needles in limbs. Wearing a support.	Powerful extenstion and pressure. Much improved 1st operation, nearly obliterated. 2nd operation.	No pain after first few hours.
28	S.	M.	22	9 mos.	11th and 12th dorsal. Small sharp angle.	Nil.	Fell down stairs 3 yrs. ago. Fell from wall 2½ yrs. ago. Fracture first noticed 2 yrs. ago. No pain in spine, but increasing inability to walk far.	Extension by pulley. Partial obliteration of prominence with creptant noise.	No discomfort in plaster corset.
29	F. J.	M.	11	2½ yrs.	Moderately prominent. 7th to 10th dorsal.	Nil.	Extends and arm pressure. Deformity nearly obliterated.	Complained considerably of pain in limbs for two days. No loss of sensation or power.	No discomfort.
30	K. J.	F.	4	1½ yrs.	1st to 4th dorsal. Head pushed forward. Sharp angle.	Old sinus over ankle and hip.	Ascribed to fall. Head carried badly for over 12 mos. Child very peevish and delicate.	Extension only. Complete obliteration.	No pain complained of.
31	R.	M.	6	2 yrs.	5th to 7th dorsal—moderate angle.	Discharging sinus in left groin.	Gradual onset. No pain; can play without discomfort. No treatment.	Extension in rack and pressure. Easily reduced.	No discomfort.
32	F. G.	M.	8	2 yrs.	2nd to 4th dorsal. 8th to 1st lumbar double curve.	Congenital syphilis.	Gradual onset. Very delicate child. Blind one eye. Taken quantities of mercury.	Both curves easily reduced by extension and pressure.	Corset required re-adjustment.

No.	Name.	Sex.	Age.	Duration of Disease.	Location of Curves.	Complications.	History.	Operation.	Remarks.
33	H.	M.	7	8½ yrs.	4th to 12th—prominent curve.	Evidences of old tubercular gland.	Paraplegia 6 mos. after a fall 4 yrs. ago. Lasted 4 mos., but weak in limbs for 12 mos. later. Not able to walk far. Complaints of pain in side and abdomen. Gradual onset.	Reduced by extension and slight pressure.	No discomfort. Pain in abdomen and side better.
34	O. K.	M.	6	1½ yrs.	Slight angular curve, 12th dorsal to 2nd lumbar.	Feeble circulation.	Fall 7 mos. ago. Child walking badly. No exaggerated reflexes. Gradual onset. History of always falling. Always wishful to rest. No history.	Reduction by pressure and extension. Difficult and only partially successful.	A little pain in abdomen for a week.
35	S. W.	F.	4	6 mos.	Slight angular curve, 8th, 9th, and 10th dorsal.	Bickety deformity of knees, ribs, and wrists. Badly nourished.	Curve noticed about 9 mos. Strong healthy child. Child delicate, 3 ops. for spina bifida—one for phimosis. Could never walk far.	Easily reduced by simple pressure.	Placed in splint. No discomfort.
36	T.	M.	6	16 mos.	Lower 4th dorsal—moderate curve.	Talipes varus.	Fall followed by illness. Paraplegia 6 mos. ago lasting weeks. Legs often painful. Difficult in micturition.	Complete obliteration by extension and pressure.	No discomfort.
37	R.	F.	1½	6 mos.	9th and 10th dorsal—moderate curve.	Talipes varus left leg. Cured spina bifida two years ago.	Fell on back 12 mos. ago, while wearing knee splint. Prominence noticed 10 mos. Abdomen deep-seated felt in loin. No injury but rapidly formed.	Simple extension. Complete reduction.	Applied splint.
38	M.	M.	8	9 mos.	4th, 5th, and 6th dorsal—moderate.	Double inguinal hernia.	Prominence noted 6 mos. No pain. Flat every 3 or 4 mos. Not traumatic.	Simple extension and slight pressure. Complete reduction.	Pain in back for 8 or 10 days.
39	F. C.	M.	6	16 mos.	3rd to 7th dorsal—prominent.	Tubercular knee.	Pain for 24 hours and some difficulty with breathing during night. Jacket opened and slackened.	Forcible extension and pressure. Reduction.	Quite comfortable. Splint.
40	W. S.	M.	7	2 yrs.	11th dorsal to 3rd lumbar—moderate.	Nil.	Traction and pressure. Reduced.	Reduced by traction.	No discomfort.
41	K.	M.	6	1 yr.	1st to 4th, rounded and prominent.	Nil.	Traction and pressure. Reduced.	Reduced by traction.	Quite comfortable. Splint.
42	R. P.	M.	4	6 mos.	5th to 8th dorsal—moderate.	Epilepsy.	Prominence noted 6 mos. No pain. Flat every 3 or 4 mos. Not traumatic.	Reduced by traction.	Two or three fits on fourteenth day. Making good progress.
43	S. F.	F.	2	6 mos.	3rd to 4th upper dorsal.				

No.	Name.	Sex.	Age.	Duration of Disease.	Location of Curves.	Complications.	History.	Operation.	Remarks.
44	M'C.	M.	44	1 yr.	2nd and 3rd lumbar—very slight.	NIL.	Sudden jerk by mother. Prominence noted. Some loss of power in limb soon after. Walks badly.	Reduced by severe pressure and traction. Cracking.	No discomfort.
45	F. L.	M.	7	2 yrs.	Lat to 8th dorsal—prominent.	Double coxitis, abscess right.	Developed while in bed and under treatment for coxitis.	Placed on double hip-splint. Comfortable.	No further activity of abscess.
46	R.	M.	6	3 yrs.	3rd to 7th dorsal—moderate.	Poss abscess right. Not opened.	Slowly developed. No pain. Difficulty in walking, due to abscesses and contraction of psoas muscle.	Easy reduction by forcible traction and pressure.	Improved by forcible traction and pressure.
47	E.	F.	4	1 yr.	Lower lumbar—moderate.	Contraction of left limb, due probably to irritation of psoas. No coxitis.	Fell from swing. Considerable pain. Difficult in walking far.	Traction and pressure. Reduction (crackling).	No discomfort.
48	J.	M.	8	9 mos.	Dorsolumbar. 10th to 12th.	NIL.	NIL.	Traction only—reduction.	Difficulty in keeping extension applied. No pain.
49	L.	M.	7	5 yrs.	7th cervical to 3rd dorsal—sharp angle.	NIL.	Strong child — curve much more acute last few months and painful. Hence operation. Injury at $\frac{1}{2}$ years. Treated by jury mast.	Traction—complete reduction.	Pain complained of for 2 days.
50	F.	M.	8	3 yrs.	Prominent curve—Involving 5th or 6th mid-dorsal ribs.	Vesical Calculus.	No clear history of injury. Partially paraplegic 12 mos. ago for 4 mos. Before ex-aggerated, even now, but no apparent loss of power or sensation. Twitching of limbs complained of. Insomnia.	Very severe traction and pressure required to almost obliterate deformity.	Pain complained of for 2 days.

Mr R. W. MURRAY said he had operated upon fourteen children, whose ages varied from $2\frac{1}{2}$ to 9 years. They were all selected cases, the children, apart from the spinal trouble, being in good health. The immediate results had been entirely satisfactory; but in one case, where the disease was in the upper dorsal region, the child had, a month after operation, weakness of the lower limbs and exaggerated knee-jerks. He drew attention to the bad prognosis in tuberculous disease of the spine amongst the children of the poor, and also to the remarkable fact that in tuberculous bone disease there was a marked absence of the formation of new bone. This being the case, he failed to see how the gap formed between the bodies of the diseased vertebrae, by forcibly correcting the deformity, could ever be filled by bone sufficiently strong to bear weight. Should this prove to be the case, we would have to rely indefinitely upon instrumental support, or have a return of the 'humpback.' While this method of operating was still in the experimental stage, Mr Murray said he proposed to rest content with what he had done, and to await further results, and in the immediate future to operate only cases upon in which paralysis existed.

Mr RUSHTON PARKER expressed his personal indebtedness to Mr Robert Jones for the knowledge of this most important advance, as it appears, in our resources in the treatment of Pott's curvature of the spine. He heard of it first in the past summer, and commenced to try it on 23rd September 1897 on a boy aged 15 suffering from angular curvature between the shoulders, complicated by total paralysis of the lower extremities, of nine months' standing. The boy was extended, under chloroform, by manual traction, and the curve pressed down with a distinct crack under the hand as the patient lay face downwards, after which a plaster of paris jacket was applied, fixing the trunk, neck, and head. He was much impressed by the difficult labour involved in the putting on the plaster jacket, which he was glad now to be able to discard. On removing the jacket, the afternoon of the meeting, 4th November, he was agreeably surprised to find the curve almost gone, and the spine free from tender-

ness. The patient was placed in a double Thomas' hip-splint, which is obviously easier to apply, as well as vastly more effectual in fixing not merely the head, neck, and trunk, but also the lower limbs, all in rigid line.

The use of chloroform, too, may evidently be dispensed with in many cases, perhaps most of them. For instance, on 1st November he thus treated a boy aged 5 with a high dorsal curve. Extension was made on the spine by five persons, one holding each limb and one the head. The child was crying loudly from fear before any manipulations were begun, but after they had continued a very few minutes the patient became quiet, and evidently free from any discomfort, and was then laid in the double Thomas' splint, in which he continued comfortable. In a third instance, he had been associated with Mr Jones in the case of a child of 5, who was simply laid in the splint without any application of force, and was lying in comfort, with every prospect of doing well.

He looked forward with hopeful interest to the application of Calot's method of straightening, combined with Thomas' double hip-splint to maintain fixation of the entire body and lower limbs of each patient, as described in the paper this evening.

Mr THELWALL THOMAS drew attention to the fact that forcible interference with tubercular bone disease did not produce paralysis, abscess, or dissemination of tubercle—three theoretical bogies that had been handed down from text-book to text-book. Recent experience in forcibly dealing with joint-disease gave surprisingly good results, and he felt sure that permanent success would follow a large number of cases treated by Calot's method.

He agreed with Mr Jones that the plaster of paris jacket was much overrated, and thought the splint exhibited much superior.

Mr GEORGE HAMILTON pointed out that in estimating the amount of improvement in paralysed cases after Calot's method, it was important that the fact that many such cases recovered under the classical methods of treatment should not be lost sight of. He could quote many such in his own practice.

Mr A. DAVIES did not think the operation justifiable, except with great circumspection, and in carefully selected cases.

Dr GLYNN, Dr STANLEY GILL, Mr NEWBOLT, and Dr SHELDON also took part in the discussion.

Mr ROBERT JONES replied.

FOURTH ORDINARY MEETING, HELD 18TH NOVEMBER 1897,—
Dr CATON, President, in the Chair.

MR C. THURSTAN HOLLAND showed radiographs of a small shot in the left orbit of a boy 17 years of age. The boy was under the care of Mr Bickerton, and had been shot in the eye on 13th September 1897. The radiographs, two in number, were taken on 21st October 1897, and the position of the shot was well shown.

Epithelioma of Right Vocal Cord; Thryotomy.

MR BARK related this case. The patient, a man aged 41 years, presented himself for treatment on 23rd February 1897. He complained of hoarseness, which commenced about February 1895, and had since gradually increased. He was a man of powerful physique, with good general health, and with no points in his family history bearing upon the present case; the voice was strongly dysphonic.

The laryngeal image showed a greyish-white papillated growth, involving and invading the substance of the anterior two-thirds of the right vocal cord. There was no ulceration, and the mobility of the cord was unimpaired.

On 21st March 1897 laryngo-fissure was performed, and the whole of the right cord, ventricular band, and arytenoid cartilage removed. Hahn's tube was used at the operation, and left *in situ* for forty-eight hours; it was then replaced by an ordinary tracheotomy tube, which was finally dispensed with on the seventh day. Swallowing could be performed with comfort on the day following the operation. Recovery throughout was

uneventful, and the patient was discharged from hospital on 14th April.

It may be observed that the tracheal tube was kept in for seven days after the operation. This is contrary to the practice of many operators, who prefer to remove it at once; but I consider the retention of the tube to be safer for the patient and more comfortable (as far as the after-treatment is concerned) for the surgeon; so much mucus is coughed up that, passing over the laryngeal wound, it must irritate and prevent its quiet healing. I think, however, on the next occasion I shall remove the Hahn tube a few hours after the operation, and substitute a rubber tracheotomy tube.

On looking into the larynx to-night, we see a firm, healthy cicatrix, which to some extent takes the place of the removed cord, and there is no sign of recurrence.

The voice is husky, but strong and serviceable, so that we must consider this a very satisfactory result as far as it goes, and an object lesson on the value of early, expert, laryngoscopic examination in all cases where phonation is interfered with.

Mr Newbolt's Report on the Growth.

The parts removed consisted of two portions, the one including the main portion of the growth, and the other its hinder limits, together with the right arytenoid cartilage. The growth itself was of greyish-white colour, hard, papillated, circumscribed anteriorly, and shading off into the tissues posteriorly. Microscopically, the growth showed a large number of cell-nests, penetrating towards the thyroid cartilage, but separated from it by unaffected tissue; the anterior margin was abruptly defined, the posterior not so marked. The papillated free surface was covered in the greater part by squamous epithelium. Examination of both portions showed that the whole of the growth had to all appearances been removed.

Dr HUNT congratulated Mr Bark on his very successful case, and thought there was every likelihood of a permanent cure. He drew attention to the duration of the disease—over two

years—and said it was not unusual for a malignant papilloma to remain quiescent for some years even, causing no symptom except hoarseness. He did not approve of retaining Hahn's canula after the operation, as he thought its immediate removal greatly reduced the risk of a septic pneumonia supervening.

Mr RUSHTON PARKER related a case operated on by him shortly after that referred to by Mr Bark, who had himself sent the case to Mr Parker for operation in the Infirmary. Hahn's tampon tube was used, and removed after operation; but on account of blood oozing from the larynx and blocking the wound by whipped clot, a tube had to be worn for respiratory purposes, but this time an ordinary trachea tube, without tampon. He had desired to avoid a tube in the after-treatment, after the manner practised and recommended by Butlin, but had been obliged to use one.

Mr BARK replied.

He had removed a small portion by means of cutting-forceps (endo-laryngeally), but this did not aid the diagnosis much; and moreover, he was quite certain that, whether benign or malignant, a flat, invading growth like this could not be thoroughly removed by endo-laryngeal operation.

In reply to Mr PAUL, he had known at least one case where the tube had to be re-introduced on account of haemorrhage.

Nine Cases of Hepatic and Biliary Surgery.

Mr RUSHTON PARKER read a note on nine operations on the liver, and said:—The cases to which I desire to draw your attention belong to three categories,—abscess of the liver, hydatid tumour, and impacted gall-stones. The diagnosis was in each case usually made by a physician, who also suggested the treatment which I followed. It is chiefly with regard to the latter that I relate the cases, which have a never failing interest, now that modern surgery so largely rescues them from the unfortunate fate formerly assailing most of them. Three were cases of

hepatic abscess, four of hydatid cyst, and two of gall-stones. I might have added a few where obstruction was caused by malignant disease in the biliary passages; but they possess chiefly an incidental pathological interest in contrast with the curable cases of cholecystotomy, and may therefore better be omitted on this occasion.

The first case of hepatic abscess occurred in a man aged 38, who had been a sailor for twenty years, but had never had dysentery or other disease accounting for the abscess, which had only troubled him by pain nine weeks. His temperature was 100° F. on the evening of admission into a medical ward in March 1894. The next day pus was drawn off by exploratory puncture, and the temperature rose to 101°, where it remained for two days, falling next day to 100°, and on the fourth below 98°. The abdomen was opened that day, the tumour tapped with a long trocar, the liver sewn to the abdominal wall, and then incised, washed out, and drained with two glass tubes. An uneventful recovery took place, and complete healing resulted in six weeks.

The second case was in a seafaring man of 45, who had been told three years before that he had abscess of the liver. On admission, in February 1896, to a medical ward, his temperature went up to 100° and 101° some evenings, but most evenings not higher than 99½°. Exploratory puncture revealed pus, and he was transferred, after which aspiration was practised, at intervals, for five weeks, on four occasions, the amount drawn off varying from 12 to 22 oz. These operations, including the exploratory puncture, were done through an intercostal space. On some of these occasions salt solution, glycerine and iodoform, and zinc chloride were injected; but although the sensations and health of the patient improved, and the temperature became normal, the contents of the abscess did not diminish, as much as 22 oz coming away on the last occasion. So on 30th March 1896 incision was practised along a costal cartilage, that structure being then removed. On passing inwards, layer by layer, complete adhesion was found between the diaphragm, pleura, and liver, so that the affected organ was simply opened without further pre-

caution and washed out. A large cavity remained, and gradually closed. After twenty-four days the patient got up daily, and quickly improved in health, got fat, and healed completely some weeks later.

The third case occurred in August 1897 in a chief officer of the mercantile marine, aged 34, under the care of Dr Bradshaw, who expressed the opinion that hepatic abscess existed, deep in the hypochondriac region. Here there was no fever, and preliminary puncture was deliberately avoided until the arrangements were made for the complete evacuation by incision. I wondered if the absence of fever were consistent with the existence of hepatic abscess, but Dr Bradshaw informed me that such concurrence had been referred to by Dr Murchison. Aspiration was performed through an intercostal space, giving vent to foetid pus, and incision was made over a rib, as in the previous case. Part of the rib and its cartilage were removed, and, on incising further, the pleura was exposed and no adhesion found. The diaphragm was then closely sewn to the parietal pleura and intercostal muscles, the diaphragm incised, exposing the liver, on which the peritoneum was also found free from adhesion. Some clear fluid escaped, and then the liver was aspirated, with issue of about a pint of foetid pus. The liver was then incised, and the edges stitched in a few places to the diaphragm and peritoneum. About two pints of pus now escaped, and the resulting large cavity was washed out and drained with glass tubes. The patient has gone on uninterruptedly well, and has changed from emaciation to stoutness, and is still under treatment pending the final closure of the wound.

The cases of hydatid were as follows:—A girl of 12 was tapped by me in four places with an exploring trocar on 11th October 1895, in three places on 13th November of the same year, and in one place in March 1896. She was brought to me by Dr Dimond, and the operation was in each case performed, without chloroform, in my house. Hooklets were found in the fluid by Dr Abram, and the patient was reported free from disease early in 1897.

The same treatment was attempted in a woman aged 49, two simple tappings in January 1897 having evacuated clear fluid containing hooklets. On 1st February the fluid was yellowish and turbid, and on 4th March purulent and foetid. On 5th March incision was done, the liver opened, and the cyst pulled out. The pus was confined to the interior of the cyst, the cavity in the liver was treated with glycerine and iodoform, and healed gradually without suppuration. The patient was well in a couple of months.

A third case was one of unusual interest, having been admitted into a medical ward, having symptoms of dulness in the right side of the chest, suggestive of a solid tumour of the pleura, in December 1896. She was 26 years of age, and by September 1897 had undergone considerable expansion of the right side of the chest and region of the liver in the upper abdomen. By this time there was no difficulty in recognising the case to be one of hydatid of the liver, for which she was prepared for operation on 29th September. A preliminary tapping in the epigastric region revealed the clear saline fluid of hydatid, so incision was done in the middle line, and on exposing the liver a further tapping was done to reduce the size of the cyst, which was then incised, liver substance having to be severed to a thickness of half an inch or more. The cyst membrane was unusually thick, but easily removed. After attaching the liver to the abdominal wall, the cavity was drained as before, and she continues still under treatment, with a sinus in which lies a glass tube. She has gained greatly in flesh and strength, and is progressing quite well.

The fourth case was sent to me by Dr Seagrave of Milnthorpe, a boy of 14, who occupies a private ward in the Infirmary. He arrived at my house in good health on 30th October 1897, when I drew off about half an ounce of the usual clear saline fluid by exploring trocar. The operation of incision and evacuation was performed next day, some twenty-two hours later. On opening the abdomen fluid escaped, which I was surprised to find already purulent, and the omentum was infected and all the neighbouring peritoneal surfaces. After well washing with

hot water, the liver was opened and the cyst extracted, slightly purulent fluid escaping also from it. After well and repeatedly washing all the epigastric portion of peritoneum, the liver opening was attached to the abdominal wall. A long glass tube was passed from the wound into the pelvis and hot water washed in, when I was somewhat dismayed to find abundant flakes of pus escaping with the fluid irrigated.

The abdomen was then opened in addition above the pubes, and copious hot irrigation of the whole cavity through both incisions carried out for a prolonged period, with a little chloride of zinc and tincture of iodine in the water. There was universal peritonitis, as evinced by vascular infection everywhere, and by purulent fluid in the immediate vicinity of the liver, as well as in the pelvis; but there was no adhesive lymph anywhere. The abdomen was closed in the epigastric region, except at the opening into the liver; and in the supra-pubic region a glass tube was inserted, the rest being closed by stitches. A certain amount of collapse occurred on the day of operation, and some sickness a couple of days later by the escape of a knuckle of intestine into the wound beside the tube; but this was reduced, the tube removed, two spare stitches tied, and the abdomen firmly closed, and the patient was convalescent in a few days.

Now follow two cases of gall-stone.

A woman aged 42 had suffered for more than fifteen years, off and on, from hepatic pains and occasional jaundice, with latterly tenderness and swelling over the gall-bladder. After treatment at many hands, with temporary relief, she was admitted into a medical ward in the Royal Infirmary, and transferred to me after a period of observation. On 1st April 1897 the abdomen was opened in the situation concerned, the gall-bladder found distended, and incised, giving vent to many ounces of foetid pus and afterwards bile. The opening was stitched to the peritoneum and muscles in the middle of the wound, and omentum drawn up across the opened peritoneum, and attached to the wound above and below the opening in the gall-bladder to prevent leakage of the septic discharge into the peritoneal cavity. With

the fluid that escaped there was a single gall-stone. The patient recovered quickly without notable incident, and left hospital in less than four weeks. After a period of convalescence at the seaside, she returned to her duty as a cook in Liverpool.

A woman aged 43 was sent to me from Kendal by my brother who, in consequence of a two years' history of pain in many attacks, and a state of intense jaundice of three months' duration, concluded that the case was probably one of gall-stones. On 26th May 1897 the abdomen was opened over the gall-bladder, which could not be seen at first, and only with difficulty felt under the liver in a very contracted form. On feeling further, the common bile-duct and gall-bladder itself, and I think the cystic duct also, were evidently packed with numerous concretions. The base of the gall-bladder was opened, and many small gall-stones removed with a small lithotomy scoop from the passages lodging them. One larger than all, about the size of a marble, impacted in the common duct, was broken with the scoop and then dislodged. In all, seventy-three were taken out: and on probing down the common duct, the instrument passed a long way, evidently into the intestine. The gall-bladder was stitched to the deeper parts of the wound, and a glass drainage-tube put in.

The patient made a slow but sure recovery. Retention of urine necessitated the use of the catheter for the first few days, during which she had uneasiness also about the wound. The jaundice disappeared very gradually, but was gone in a month's time. After a fortnight the tube was replaced by a packing of cyanide gauze dipped in warm water. At the time of operation a scanty brownish biliary mucus escaped, but afterwards a copious discharge of green fluid filled the dressings. She was healed in less than five weeks, and returned home. On 15th November 1897 I heard that she had suffered occasional twinges of pain in the affected region, and some flatulent distension, due to habitual constipation, but that otherwise she continues well.

The cases of hepatic abscess resolve themselves chiefly into questions of technical surgery, and yet not altogether; for

although the diagnosis was in each case confirmed by exploratory puncture, that incident did not occur in the third instance until the moment preceding the complete evacuation by incision. Moreover, the absence of fever, although the abscess proved to be foetid, and the total absence of adhesion in either peritoneal or pleural cavity, are significant facts; the former in the medical analysis of symptoms, the latter in relation to the details of surgical treatment.

In the cases of hydatid, the question of puncture is evidently one of considerable importance. In Case 4 that act sufficed, though frequently repeated, to get rid of the disease without any ill effect to the patient's health. She was a mere child, and that fact may have been in her favour. And puncture is a recognised mode of treatment, formerly relied on almost as a matter of routine, but one that may now be profitably reviewed as fit subject for discussion. In Case 6 no puncture was made until the moment preceding incision, and therefore without possible harm.

In Case 5 puncture was performed on several occasions without local or constitutional injury to the patient. But although twice, at intervals, the fluid evacuated was clear and saline as usual, on the next occasion it was turbid, and on the last purulent and foetid, being followed next day by incision and evacuation of pus with the cyst, and eventual healing without further suppuration.

The fourth case appears to me, however, to have been in the greatest jeopardy, owing to universal peritonitis, purulent and flaky, which is apparently traceable to nothing but the puncture performed less than twenty-four hours before. It is not easy to understand how this could result from issue of the clear saline fluid ordinarily filling a hydatid cyst, and it is possible that the fluid in this case had commenced to change before the puncture was effected. Be this as it may, it appears to be the experience of our Australian colleagues, who treat hydatids on a very large scale, that cases submitted to mere puncture, single or repeated, prove fatal in a by no means unimportant proportion,—a statement which, coupled with this example, will make me extremely

chary of puncturing in future, except when preparing to incise and evacuate immediately. On this or any other question arising out of these or similar cases, the opinions of members are solicited.

Dr BRADSHAW wished to emphasise the importance of recognising that the absence of pyrexia for longer or shorter periods by no means excluded hepatic abscess. In the third case operated on by Mr Parker, the temperature was normal or sub-normal during the five days the patient was in hospital before operation. The liver was greatly enlarged, reaching as high as the third costal cartilage. The contents of the abscess were estimated at not less than three pints. The diagnosis was based mainly on a history of tropical diarrhoea, pain referred to the right shoulder, tenderness in the region of the liver, and more especially on the remarkable enlargement of the organ in an upward direction.

Mr PAUL used the aspirator for hydatids of the liver in children, and had met with several cures. In older subjects and larger tumours incision was generally desirable. In both abscess and hydatid he had had the misfortune to meet with cases in which a communication had been established with the bile-ducts previous to operation. All ended fatally sooner or later. In reference to gall-stones, he thought the question of recurrence extremely important. Apart from inaccessible stones left behind, it seemed to be very rare.

Dr E. T. DAVIES thought the use of the exploring needle for diagnostic purposes was to be deprecated, unless immediately followed by operation.

Mr BANKS, Dr FINEGAN, Mr LARKIN, and Dr O'HAGAN also made remarks.

Ice-Cream as a Vehicle of Infection in Typhoid Fever.

DR HOPE, who read a short paper on the above subject, said:—With the exception of certain notable instances of large epi-

demics of typhoid fever, or of distinct infection from patient to attendant in isolated cases, the origin of the majority of cases of typhoid fever is never removed from the stage of conjecture: over and over again persons become infected with typhoid fever, and the closest investigation fails to establish the source to which that infection is due. Most commonly a defect in the drainage system of the dwellings is suspected, and the patient's friends, his doctor, and others interested rest content with the belief that this was the case, although it is probably less frequently so than is supposed. A series of cases having a definite origin of an unusual character have recently occurred within the city, and the circumstances associated with it are of some interest.

During the first four days of last October, four cases of typhoid fever were notified in the Knotty Ash district of this city. The district in question is a somewhat large suburban one, and there was nothing in the incident to call for special comment. On 4th October Dr Pitts, whose attention had been directed to these four cases, called at the Municipal Offices to ask if anything exceptional in regard to them had been learned, the point of community being that they were young children, all attending the same school. The following morning, 5th October, five more cases were notified, and between that day and the 10th October ten more were recorded, all of them being children attending the school referred to. The period of the illness of the various patients indicated the end of the first week in September as the probable date of infection. Possible sources of infection which may have existed at the homes of the patients were investigated and excluded; it was also ascertained that the milk supplied to the various houses came from six separate dealers. A careful examination of the water-supply of the school removed any source of suspicion from it, but it transpired that for several weeks preceding the occurrence of the first cases alterations in the drainage system had been in progress, a new drainage system being in course of substitution for an obsolete one; temporary privy accommodation had meantime been provided for workmen, and used by the children, in an adjoining field, near to which ran a foul brook. These circumstances naturally led to

suspicion that the reconstruction of the drainage system of the school may have been responsible for the sickness. On 16th October information was received from the Denbigh Royal Infirmary that a pupil of a school there, who had visited Liverpool early in September, had had typhoid fever. This boy had been to Knotty Ash, but had not been to the school there. Identical information concerning two children living at New Brighton had been received a few days earlier.

In the course of the inquiry the fact had been elicited that a village fair had been held in Knotty Ash on 6th and 7th September, and it transpired that every one of the children suffering from typhoid had been present at that fair.

All of the infected children, with three exceptions, admitted that they had partaken of ice-cream at the village fair, and of these three, two admitted that they had eaten chip potatoes at the fair, and the third was too young to give any account of himself. So far, the evidence showed that the one circumstance of community between the infected children, whose numbers had increased to twenty-seven, and the only one, was ice-cream or chip potatoes which they had eaten at the fair.

The vendors of ice-cream, etc., who had been present at the fair were reported to have come from Warrington, and there appeared but a slight chance of tracing or pursuing the investigation further after so long an interval. However, instructions were given to visit every ice-cream establishment within the municipality of Liverpool, to ascertain whether or no any person in connection with them had been to Knotty Ash fair, or if any sickness existed at their homes. The result of that investigation brought to light the fact that an Italian vendor dealing in ice-cream and chip potatoes had sickness in his house at the time of the fair, and this sickness was proved to be typhoid fever. It was the second case in the house, the first case having been duly notified and removed to hospital as long ago as 11th August; that is to say, nearly one month previous to the time of the fair, and a month earlier than the occurrence of the case which existed in the house on 6th September; the second patient being the man's wife, who had quite recently been confined.

This vendor combined with his trade in fried fish the business of an ice-cream maker and chip potato dealer. He at first denied that he had been to the fair at all, but other members of his own calling identified him, and he admitted that he had been present at the fair. Samples of his cream which he then had in his possession were taken and submitted to Professor Boyce, his business in the meantime being, of course, put a stop to.

The difficulty in the way of tracing the vendors was that the manufacture of ice-cream is not carried on systematically. A person may make the material for a month or so, or perhaps only on Sundays, and then discontinue it altogether for a longer or shorter period, until he thinks that some occasion is likely to arise that will make it profitable to him to resume the business.

There is no Act of Parliament or bye-law relating to ice-cream such as those which regulate the sale of milk, but inasmuch as milk is an ingredient in the manufacture, the places where ice-cream is made will in future be dealt with in exactly the same manner as places where milk is sold. The proceeding presents difficulties and uncertainties into which it is not now desirable to enter, but in order to remove some of these obstacles, powers are being applied for in the Liverpool Act which will come before the next Parliament, to deal with itinerant vendors of ice-cream and other articles of food, by way of licensing these persons, and also by way of registering the premises where the material is made or stored, so that no premises shall be registered unless they are structurally fit for the purpose, and the fact of registration carries with it power to inspect the premises at all reasonable times.

Dr HILL said he was engaged at the present time in an investigation into the micro-organisms of sewage. He was struck with the marked similarity between plate cultivations of the ice-cream and those of sewage. It was difficult to distinguish between them, both from the nature and number of the organisms present, many being identical in character and appearance.

Professor BOYCE, Dr BARR, and Dr LOGAN also spoke on the subject.

The Clamp and Cautery Operation for Hæmorrhoids.

MR BANKS read a note on the Clamp and Cautery Operation for Hæmorrhoids. He said that he considered the operation a good one, and one which was permanent in its results. He also said that he thought Paquelin's cautery, if properly cared for, a most reliable instrument. He mentioned various small details which he had found useful to the patient in saving pain, and to the surgeon in saving time and annoyance.

Mr ROBERT JONES condemned the clamp and cautery as an implement not in accord with modern surgery: it possessed no advantages over cleaner methods. He had for some years practised a method of suturing hæmorrhoids which promoted rapid healing, rendered bleeding impossible, and saved the patient much pain. Dilatation of the anus should always be performed as a preliminary.

Mr THELWALL THOMAS had abandoned the cautery for years, and now treated hæmorrhoids by clamp, removal of excess, and suturing the stump with a crossed and reef-knotted stitch. The operation was painless and uneventful. Patients were out of bed on the sixth or seventh day. Hæmorrhage could not occur. Forceable stretching of the anus was always used as a preliminary.

Mr PAUL supported Mr Banks's contention that, properly carried out, the operation by clamp and cautery was the most safe, effective, and permanent cure for hæmorrhoids.

Mr RUSHTON PARKER thought the principal aid to operation and painless recovery was the stretching of the anus.

Mr BANKS replied.

FIFTH ORDINARY MEETING, HELD 2ND DECEMBER 1897.—
Dr CATON, President, in the Chair.

THIS was a Clinical evening. A large number of interesting cases were shown, and at 9 o'clock discussions took place in the various Medical, Surgical, and other Sections.

SIXTH ORDINARY MEETING, HELD 16TH DECEMBER 1897.—
Dr CATON, President, in the Chair.

Transparent Implantation Cyst of the Iris.

MR CHARLES H. B. SHEARS related the following case of traumatic cyst of the iris.

J. D., aged 35. Sixteen years ago the left eyeball was penetrated by a packing-needle, just at the upper margin of the cornea, where the scar of the wound can be plainly seen to-day. The needle must have carried with it into the eye a small piece of corneal epithelium, and must have planted this in the iris. The man seems to have recovered from the immediate effect of the injury in the course of two or three weeks, and apparently with very little damage to sight, and it is only within the last four months that the eye has again become red and irritable, and he has noticed something growing in the front of it; the sight also has failed very much.

The upper half of the anterior chamber is completely filled by a transparent cystic growth, which festoons over the upper half of the pupil. The back wall of the cyst is formed by the pigmentary layer of the iris; the iris stroma seems to have been pushed on one side or absorbed, for the clear wall of the cyst is in close contact with the back of the cornea; the cornea itself is quite clear. The tension of the eyeball is firmer than it should be; the eye itself is congested and irritable to light. $V = \frac{6}{24}$.

Formerly there was very considerable difficulty in explaining the origin of these cysts of the iris, but it is now generally admitted that the greater number of them are implantation cysts, following, as they usually do, some injury to the front of the eyeball.

At the time of the accident (or operation) a minute piece of skin from the lids, or an eyelash, or epithelium from the cornea or conjunctiva, is driven into the iris or anterior chamber; here the fragment may remain quiescent for some time, but sooner or later it may act as a foreign body, and begin to grow, and cause increased activity in the structures which surround it. If a piece of skin or root-sheath of a hair is the offending substance, the resulting cyst will be opaque and sebaceous in character; if the cyst grow from epithelium of the cornea or conjunctiva, it will be transparent and contain serous fluid. More rarely cysts of the iris may result from closure of the crypts which are normally present in this structure, and without any injury, but the greater number appear to arise as the result of penetrating wounds, and in the manner described.

As the cyst continues to enlarge, the eye will become more and more irritable and the tension become increased, and even sympathetic inflammation of the sound eye may ensue: under these circumstances it is necessary that something should be done; and I purpose, at an early date, to make a large incision into the anterior chamber, and hope to be fortunate enough to be able to remove the whole of the cystic growth.

Note on Chloroform for the Removal of Tonsils.

DR PERMEWAN read a note in which he said he thought it was inadvisable and dangerous to use chloroform for the removal of tonsils. In the majority of cases it was quite unnecessary to use any anaesthetic whatever; and in the few cases where an anaesthetic was unavoidable, he advised the administration of nitrous oxide. The disadvantages of the use of an anaesthetic were considerable, both to the patient and the operator. These disadvantages were fully considered, under the following heads:—The risk

of general anaesthesia itself; blood in the trachea; the shrinking of the tonsils under an anaesthetic; recumbent position not convenient; the tongue apt to get in the way.

Mr RAWDON had removed many tonsils from children and adults, the former sometimes under chloroform, especially when post-nasal adenoids were attacked at the same time. He had never had any anxiety with the anaesthetic: he took special care that the patients were under, but not deeply under chloroform.

Dr HUNT agreed that, as a rule, tonsils should be excised without any anaesthetic, but in young and nervous children it was often necessary to give one, and he preferred chloroform. He believed it was the best anaesthetic in those cases, and also where tonsils and adenoids had to be removed at one operation.

Mr BARK said he could not understand anyone using chloroform for removal of tonsils only; that enlarged tonsils in young children were almost invariably accompanied by adenoids; it was more important to remove the post-nasal growths than the tonsils; as a general routine, he removed both tonsils and adenoids in one operation, under chloroform. Gas and ether was not a good anaesthetic for throat operations. When it was a question of adenoids alone, he operated under nitrous oxide, with the head over the table-end.

Dr FINGLAND strongly deprecated the practice of administering chloroform to patients in the upright position. In the recumbent posture and its modifications, these objections were not so important. If an anaesthetic was required in cases of excision of the tonsils, and the upright position was preferred, he recommended nitrous oxide, or if tonsillotomy and removal of adenoids were to be performed simultaneously, and a longer anaesthesia was required, then ether, or nitrous oxide followed by ether, should be administered, the latter preferably, by means of an Ormsby's inhaler.

Dr HOLLAND agreed with Dr Permewan that chloroform should not be given for the removal of tonsils. If it was necessary

that anaesthesia should last longer than could be procured by nitrous oxide alone, then the inhalation of gas could be followed up by ether, administered by an Ormsby inhaler, to the point of the disappearance of the eye inflex: this degree of anaesthesia would give ample time for the removal of both tonsils and any growth in the naso-pharynx, and then the patient rapidly recovered consciousness.

Dr CARTER pointed out a simple method by which, in nervous people, the tonsils could be easily reduced inside without knife or guillotine. A small piece of caustic soda was fused in a spoon; the end of a wooden penholder being dipped into this, a thin scale of the caustic soda adhered to this, and could not fall into the mouth. The tonsil having been painted with solution of cocaine a few minutes previously, the end of the stick charged with the soda was pressed against it for one or two seconds. In a few days a small slough separated. A renewal of this process every few days soon reduced the gland by a half or two-thirds, with, of course, a little soreness so long as it was being carried out.

Dr O'HAGAN remarked that, after hearing the interesting discussion on this subject by expert anaesthetists, he might say that having done tonsillotomy a very considerable number of times, his experience was that no anaesthetic should be used in the case of adults.

Painting repeatedly the tonsils with 10 per cent. solution of cocaine for ten minutes before the operation had always, in his experience, enabled him to remove the tonsils without pain, even in children of 4 and 6 years old.

With regard to the removal of post-nasal adenoids, he believed chloroform to be the most useful anaesthetic, and the recumbent position, with the head overhanging the table, the best position.

Dr RAW, Dr BURNS GEMMELL, Mr MURRAY, Mr LARKIN, and Mr NEWBOLT also took part in the discussion.

Dr PERMEWAN replied.

Hare-lip and Cleft Palate.

Mr R. W. MURRAY read a short paper on this subject, and brought forward several children upon whom he had operated for hare-lip and cleft palate, to show the results of operation upon the lip, and to demonstrate the effect of early closure of the palate in respect to the powers of speech.

In the course of his remarks Mr Murray said:—The object of this communication is to bring before your notice the results of some 200 operations I have performed for hare-lip and cleft palate. During the last seven years I have operated for hare-lip 115 times. The deformity in the great majority of cases involved the left side of the lip, and was associated with a cleft palate. The age at which the operation was performed depended, of course, upon various circumstances, but, other things being equal, I selected about the fourth week. If the deformity involved the lip only, and the child was able to take the breast, then I postponed operating until the child was weaned,—say, until 8 months of age.

The method I usually adopted was the following:—The infant being under chloroform, I first freely divide the lip on either side from the maxillæ and alveoli, and the success of the operation largely depends upon the freedom with which this is done. I then prepare the edges of the cleft in the manner indicated in the diagrams.



Fig. 1.

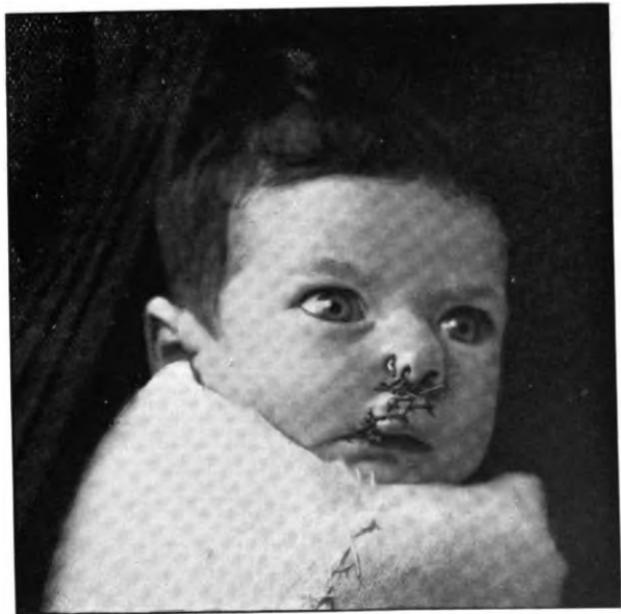


Fig. 2.



Fig. 3.

It is well not to interfere with the premaxilla, by bending the bone back or otherwise, for it is quite remarkable how the closure of the lip influences the subsequent growth of the bone. I have noticed in a large number of cases, where the gap in the alveolar



To illustrate application of button-suture in a case of Right Hare-lip.

margin has been considerable, that a few months after the closure of the soft parts over it, the gap has practically disappeared, the alveolar margins being almost in contact. As regards sutures, I have never used hare-lip pins, preferring silkworm gut and horsehair. The advantage of this particular method of operating is, that it ensures a continuous line of mucous membrane for the upper lip; the subsequent scar does not suggest a hare-lip to anything like the same extent as if the scar was entirely vertical; and further, half the scar is in the 'line of cleavage' (Kocher), and consequently shows very much less. The chief difficulty in hare-lip operations is, in obtaining a good result as regards the nose. Before operation, the ala of the nostril on the affected side is, when the cleft is complete, markedly flattened; and in my own practice, and in the practice of other surgeons, I have often noticed that, although the result of the operation has been satisfactory in respect to the lip, the result has been marred by a slight falling away of the nostril on the affected side. To obviate this, I have for the last few years approximated the ala of the nostril on the affected side to the nasal septum by means of a button-suture, which is illustrated in the accompanying photograph.

In cases of double hare-lip, when the intermaxillary bone is prominent, I almost invariably remove it, and a week or so afterwards proceed with the closure of the lip. A great deal has been written both for and against the removal of this bone, but to my mind the advantages of removal far outweigh the disadvantages. If the bone is retained, it acts as a wedge, preventing the closure of the anterior part of the palate; besides which, in many cases, the presence of this bone, even after being pushed back, would, considering the small amount of material we have for the formation of an upper lip, render the operation extremely difficult. The main objection to the removal of this bone is, that the upper lip becomes flattened, and the lower lip consequently projects, producing an underhung appearance. But the flattening of the upper lip can, to a very large extent, be obviated if the bone is removed subperiosteally; and if one side of the lip be closed at a time.

Now, let us consider briefly the closure of the cleft palate. In all surgical text-books, and in most of the works dealing especially with this subject, the age stated at which the palate should be operated upon is somewhere between the third and sixth year. This, I am convinced, is a mistake; for after all, the chief object in closing a cleft palate, more especially when this is the only deformity, is to render the powers of speech more perfect than they otherwise would be.

If operation is delayed until the third year or later, the child by that time has learned to talk, and necessarily to talk badly: a habit, once acquired, very difficult to overcome completely. The point I wish to especially emphasise is this—*the palate should be closed before the child has learned to talk at all*. This being the case, other things being equal, the sooner the cleft is closed the better, and I have on several occasions operated upon children during the first few months of life, but have come to the conclusion that, as a rule, it is not advisable to operate so early.

When performed at this early age, the operation is a difficult one, owing to the small space one has to work in: the tissues are extremely friable, and require to be handled with the greatest care; besides which, the halves of the uvula are then so small that, after paring their edges, there is hardly sufficient tissue left to form a uvula with. During the last four years I have delayed operating until the child is about twelve months old, and I show you this evening several children whose palates were closed during infancy, and who now talk quite naturally, it being impossible to detect from their speech that they ever had cleft palates. In these particular cases the cleft of the palate was not associated with a hare-lip. When the deformity includes both the lip and the palate, I operate upon the lip about the fourth week, close the soft palate at the end of the first year, and subsequently close the hard palate. In this class of case the result of operation, as regards the powers of articulation, is necessarily not so satisfactory as when the palate only is cleft, but, as you have seen in several cases shown you, the defect in speech is not very noticeable.



Before Operation.
H. L., aged 5 weeks



After Operation.
H. L., aged 11 months.

Dr RAWDON indorsed all Mr Murray had said as to his practice in operating in cases of hare-lip and cleft palate. To attain the best result it was desirable, at whatever age the operation was undertaken, that the patient should be well nourished and well grown. For sutures in hare-lip he used in preference one material, namely, horsehair. He agreed with Mr Murray that there was no object gained, while the difficulties were far greater, in attempting to close a fissured palate under seven or eight months of age. He had the greatest objection to chloroform being administered by a Junker-pipe while operating, preferring to wait a minute or two, as often as required, for fresh chloroform to be given by the open method.

Pneumo-thorax.

DR BUSHBY read the following notes of several cases of pneumo-thorax recently under his care :—

During the past twelve months five cases complicated with pneumo-thorax have come under my notice, and as some of them have presented points which have been of great interest to myself, I have thought them worthy of being brought before the notice of this Society.

Perhaps it will be better if, before relating the cases, I mention briefly the points which have chiefly attracted my attention, and which I have endeavoured to emphasise in my report.

The first is, that the detection of the condition depends chiefly upon a thorough examination of the chest being made, as the causes are numerous and widely different in their nature, and the history given by the patient is often misleading, and not calculated to arouse suspicion of the affection.

The second is, that too great importance should not be attached to the detection of pathognomonic signs: by these I mean the succession splash, *bruit d'airain*, metallic tinkling and echo. Those are all very well if they are present, but they are very apt not to be. The leading signs in diagnosis are, I think, contained in the following quotation from Dr Fagge's article on the subject :—

“ In general, pneumo-thorax is to be suspected whenever, over a large part of the chest, but on one side only, marked deficiency

of vesicular murmur is associated with tympanitic resonance on percussion."

The last point arises in connection with my fifth case, and consists in the question as to the advisability of puncturing the chest.

My first case is that of a gentleman, aged about 44 years, who is employed as clerk to the school for the blind in Hardman Street. Some six or seven years back he had an attack of typhoid fever, from which he made a very slow convalescence. During convalescence he was seen by Dr Cameron in consultation, and was then told that his lungs were weak.

I first attended him from the 19th October 1896 till the 9th November 1896 for a slight attack of haemoptysis: the only physical signs then present denoting lung disease were slight impairment of percussion over the right apex, prolonged expiration, and a few moist crepitations.

After the 9th of November he resumed his employment, and enjoyed fair health till the 23rd of December of the same year. That was an intensely cold and foggy day. In the evening, on his way home to Egerton Street, while he was in Blackburne Place, he was seized with an attack of coughing. While coughing, he suddenly felt a painful sense of distension arise in the right side of his chest, so extreme that he could hardly breathe; there was also a distressing feeling in his throat, as if some one was strangling him. It took him nearly three-quarters of an hour to struggle the short remaining distance home, he having to stop every few yards, hold on to railings for support, and gasp for breath.

I saw him the same evening; he was in bed, and was in considerable distress with his breathing. I found the heart's apex displaced to the left of the nipple, and there was some distension of the right side of the chest. There was a loud over-resonant percussion-note on the right side in front, extending to the left border of the sternum; the liver dulness was completely abolished, and breath sounds were absent. On the right half of the back there was also an over-resonant percussion-note and absence of breath sounds; on the left side, both back and front, there was

a normal percussion-note, and the breath sounds were somewhat exaggerated. There was no *bruit d'airain*.

He remained in very much the same condition for two or three weeks, during which time he was several times seen by Dr Dickinson in consultation.

He made a somewhat slow recovery. The breath sounds slowly re-established themselves, the heart came back to its proper place, and we could follow, week by week, increase in the liver dulness, till it finally also became normal.

On the 11th of February he went away to Southport, and returned to work on the 4th of March. He fulfilled his duties till the 10th of last November, when he had to give in, owing to a fresh accession of tubercular disease, and is now in a very weak condition.

The interesting points in this case I think are, first, that, although in a tubercular subject, the pneumo-thorax was recovered from; second, that no pathognomonic sounds, such as splashing or the *bruit d'airain*, were ever present.

My second case is that of a constable in the Liverpool police force. During the eight years that he has served in the force he has had good health, excepting an attack of influenza six years ago.

He is a man 6 feet in height, and of strong physique.

During the last few days of April in this year he contracted an ordinary catarrhal cold, which left behind it a slight cough, with a little loose frothy expectoration.

On the 11th of May he had to attend drill in Newsham Park, the men having to parade in their tunics and leave off their over-coats, which they were then wearing on street duty. The day was extremely cold, and the exposure made his cough much worse. The following night he was out on duty, and got to bed at 6 next morning. During the day he was greatly disturbed by his cough. He got up at 3 in the afternoon, but feeling ill, returned to bed, slept till 6, and then woke up coughing. While coughing, he felt a severe pain all over the left breast and also inside the chest, but this was not accompanied with much difficulty of breathing. He rose at 8 the following

morning; but when he got on his feet, he found that he could hardly breathe, and the pain in the left breast, which had abated during the night, returned again, and was rather worse than on the previous evening.

I saw him about noon that day. His breathing then, although somewhat hurried, was by no means distressing.

On examining his chest, the first point I noticed was that the heart's apex beat could not be felt in its proper situation.

I then found that all over the front of the chest on the left side there was a loud over-resonant percussion-note, extending to the right border of the sternum, and that no breath sounds could be heard. On the right side the percussion was normal, and breath sounds exaggerated in their loudness and distinctness.

All over the left back there was over-resonance to percussion and absence of breath sounds; on the right back, normal resonance and exaggerated breath sounds. The left side did not move as freely as the right.

I then tried to locate the heart, but found myself absolutely unable to do so,—palpation, percussion, and auscultation revealed nothing. I could not hear the slightest sound; I could feel nothing, even when the patient leant well forwards, and then lay on his right and left sides, and finally on his face. The heart had disappeared, being buried somewhere deep in the chest. His pulse was 90 in the minute, and was regular, but weak.

No *bruit d'airain* was to be heard.

The treatment adopted was rest in bed, and a simple cough-mixture containing paregoric.

I saw the patient frequently during the next fortnight, and he remained in very much the same condition, being quite comfortable so long as he was quiet; but being short of breath, when he exerted himself he had a slight mucous expectoration, which I examined several times for tubercle bacilli, but never found them.

In the third week I was first able to hear distant breath sounds, and also to hear faint cardiac sounds,—the heart sounds being first heard, well to the right of the sternum. The breath

sounds by slow degrees re-established themselves, and the heart sounds increased in distinctness; then I was able to feel the impulse to the right of the sternum, subsequently on the left, and finally, about the end of the seventh week, it was felt to be beating in its correct situation.

He was by this time feeling quite well, but somewhat weak. After a short holiday I examined him again, and then finding his chest to all appearance normal and in good working order, I sent him back to duty: he has continued on duty without intermission since. He says he feels in perfect health, and on examination of his chest nothing wrong can be discovered.

As there was no evidence of tubercle in this case, I attribute the pneumo-thorax to the bursting of an emphysematous bleb. It is also interesting because no fluid was poured out, so there was no splashing or tinkling, and also there was no *bruit d'airain*.

Case of H. D. C., age 48 years, a seaman, admitted into the Northern Hospital 10th May 1897. This man had been trading to the West Coast of Africa for several years, and when asked the nature of his illness replied that he was suffering from fever and ague, and gave us almost a 'text-book' account of his attacks, describing the cold, hot, and sweating stages with great accuracy. His bronzed, earthy complexion also supported his self-made diagnosis, so it was with a strong presumption in favour of malaria that we commenced our examination. We found the heart's apex beating in the 6th interspace, 2 in. to the left of the nipple line; and on further investigation, the cause of this was found to be hydro-pneumo-thorax of the right side; there was loud splashing, the *bruit d'airain* was beautifully marked, and there was also metallic tinkling. There was also evidence of disease of the left apex. The man, who was in a very emaciated and weak condition when admitted, lingered on till 20th May, and then died. Tubercular disease of the left lung was found at the post-mortem examination, and also hydro-pneumo-thorax of the right pleural cavity, the right lung being strongly contracted and covered over with thick layers of tough lymph.

This case, besides being a thorough example of hydro-pneumo-thorax, is, I think, of some importance, as showing what a

misleading history such cases may give, and that a routine examination of the chest soon takes one off the wrong scent and puts you on the right.

The case of M. R. I am enabled to relate by the kindness of Dr Dickinson, whose patient he was in the Northern Hospital. The case illustrates one of the many ways in which pneumo-thorax may arise. He was a strong, well-developed man, aged 29 years, employed as a labourer in the grain warehouse on the Dock estate. He was admitted into the hospital on April the 26th of this year, suffering from pneumonia of the left lung. His illness was attributed by him to swallowing the dust of the grain, with special reference to a large particle of chaff which he had swallowed the wrong way, and had had a severe choking attack over, some six or seven days before his admittance. He did not seem at first to be very seriously ill, and the temperature six days after admittance stood at normal; two days later it rose again, and a relapse, again affecting the left side, seemed to have taken place; this proved to be more serious than the first attack, and for ten days subsequently the patient was extremely ill. On May the 14th, which was about the twentieth day of the patient's whole illness, the House-Physician asked me if I would see him, as he had that day quickly become very much worse, and he had found that the heart was considerably displaced to the right, consequently he had come to the conclusion that there had been rapid effusion into the left pleural cavity, and asked for my sanction to his aspirating the chest.

I found the patient in an extremely critical condition; in fact, he looked as if he had not many hours to live. The apex of the heart was felt beating just inside the right nipple, but on percussing the left side of the chest it was found to be resonant—in fact, over-resonant. At the back there were a few inches of dulness at the extreme base, the rest being resonant. I listened with my ear, applied directly to a towel placed over the patient's chest, and could hear no breath sounds. On the patient accidentally making a slight movement, I heard a faint splash, and on gently shaking the patient, loud splashing was heard; the *bruit d'airain* was also distinctly present. There was slight foetor

of the breath, and the expectoration was also foetid, but not strongly so, and this was the only day on which this had been noted.

I came to the conclusion that sloughing had taken place in a pneumonia patch on the surface of the lung, and in consequence pyo-pneumo-thorax had arisen. I did not see that any decided benefit was likely to accrue from aspiration, and did not care to advise an incision being made, considering the patient's moribund state, especially as Dr Dickinson was momentarily expected. Dr Dickinson arrived shortly afterwards, and a puncture was made in the chest, and a small quantity of intensely foetid fluid withdrawn. This trivial proceeding, however, increased the collapse to such an alarming degree that opening the chest was out of the question, and the patient very shortly afterwards died.

At the post-mortem examination there was found pyo-pneumo-thorax of the left side, there being about two pints of dirty brown watery fluid present, which had an almost unbearable fector. On the surface of the lung there was a large diffuent gangrenous patch, which had broken down into the pleural cavity, and there were two other similar patches in the lung. While handling the patch on the surface of the lung something hard was felt, and on being picked out and washed, was found to be the greater portion of the outside covering of a grain of wheat. This evidently was what the patient had swallowed the wrong way, and was the cause of the pneumonia and subsequent gangrene.

This case shows, I think, how very divergent in their characters the causes of pneumo-thorax may be, and how unexpectedly they may come before you.

My last case is that of a man named W., 29 years of age, who came into the Northern Hospital on the recommendation of his doctor, who sent a note with him saying that he had acute double pneumonia.

I saw him immediately after his admittance into the hospital on the 17th of November. He had adopted an extremely peculiar attitude, lying on his left side, his body across the bed, with

his head hanging over the left edge, supported by his hand, the left side of his chest pressing on a pillow doubled up underneath him. He was evidently in great distress with his breathing, the respirations numbering 44 in the minute, and *gasping* in character. The patient was got to sit up, and we first proceeded with the examination of his back. It was at once noticed that there was great distension of the right side. On subsequent measurement it was found to be $18\frac{3}{4}$ ", as against $16\frac{1}{2}$ " for the left side. The percussion over the left base was normal, and breath sounds were easily heard, accompanied by sibilant ronchi. From the level of the spine of the scapula up to the apex there was dulness on percussion, and on auscultation numerous moist bubbling râles.

Over the whole of the right back, with the exception of a small area round the root of the lung, there was a loud over-resonant percussion-note, and absence of breath sounds over the root of the lung. The percussion note was less resonant, and there was distant amphoric breathing.

On examining the front of the chest, the distension of the right side was still more apparent, especially over the region of the liver. The heart's impulse was found to be beating in the 6th interspace, two inches to the left of the nipple line; there was dulness to percussion over the left apex and abundant crepitations. All over the front of the left lung there was loud over-resonant percussion, extending to and slightly beyond the left border of the sternum, and also completely abolishing the liver dulness; the breath sounds were absent, with the exception of over a small area about the nipple, where faint cooing respiratory sounds could be heard; vocal resonance and fremitus were abolished. There was no splashing, no *bruit d'airain*, nor metallic tinkling.

The patient was extremely pale; there was no lividity of the lips, or other signs of cyanosis. We elicited from the patient the facts that he had for months suffered from a cough, with expectoration; had had night sweats, and one slight attack of haemoptysis; and that two days previously (on the 15th), while coughing somewhat violently, he had felt something go wrong

in his chest, and that ever since he had been extremely distressed in his breathing. We then examined his sputum, and found crowds of tubercle bacilli. The question of puncturing his chest was discussed, and it was decided first of all to try whether small doses of morphine would relieve his distress; accordingly he was given one-sixth of a grain hypodermically. I saw him again the same evening, when he expressed himself as considerably relieved, and it was decided to persevere with that treatment. The two following days Mr Arthur Wilson saw him with me, in case we should decide to puncture, but day after day the patient seemed to be better, took his food well, and expressed himself as relieved, his respirations coming down to below 30 per minute, and we heard breath sounds with increasing distinctness over the upper half of the right side of the chest. The distension, however, did not diminish, nor the heart make any approach to its proper situation, and the patient always lay in the peculiar position that I first saw him in—his head resting on a pillow placed on a chair by the left side of the bed. On the 23rd of November he seemed going on favourably when I saw him in the middle of the day; but later in the afternoon he suddenly was seized with a fresh attack of dyspnoea, and died in about quarter of an hour.

On opening the abdomen at the post-mortem examination, the liver was found greatly displaced, the upper border lying level with the lower edges of the ribs, and the diaphragm on the right side bulging strongly towards the abdominal cavity. The chest wall was punctured under water, and air came vigorously bubbling out. The left lung was somewhat adherent to the chest wall, and was the seat of extensive tubercular disease, breaking down into small cavities at the apex.

The right pleural cavity was distended with air, which rushed out as the cartilages were being cut, and it contained no liquid; the lung was collapsed. The upper lobe had tubercular nodules scattered through it, and on the outer side there was discovered an aperture about the size of a crow-quill, leading into a small cavity. This aperture was quite patent, and there was no evidence of any lymph or other reparative materials around it.

The points of interest about the case are, to me, the absence of the *bruit d'airain*; that although the condition was in existence for over eight days, no liquid was poured out, and consequently there was no splashing; and finally, whether we should have done better for the patient if we had punctured his chest with a trochar and let out some of the distending air. I had never before met with a case in which the advisability of the operation was prominently brought up. On first seeing the patient I was extremely perplexed about it, but subsequently the relief the patient experienced from the morphine put me off; but on now reviewing the case, it is evident the cardinal symptoms did not improve—I mean, the distension of the right side of the chest and the displacement of the heart,—although it is true the increasing audibility of the breath sounds seemed to show that the lung was distending. At first I postponed puncturing, as my reasoning took the following lines, that when a rupture takes place on the surface of the lung, air accumulates in the pleural cavity, the lung collapses, and the edges of the rupture come together and are covered over with lymph, which subsequently organises and becomes firm; consequently, when the air begins to be absorbed, the mended part may have gained sufficient strength to stand the strain of gradual distension. But if the chest is punctured within a day or so of the occurrence of the rupture, it is only to be expected, if any quantity of air is let out, that the repair will not be sufficiently firm to stand sudden distension, and will give way, giving rise to a second shock from collapse of lung, distension of chest, and displacement of the various surrounding organs.

In this case, if the aperture we found at the post-mortem examination was the original one, I do not see that puncturing could have afforded anything but the most passing relief, as it was quite patent, and as large as any trocar that was likely to have been used, so that air would have passed through the lung into the pleural cavity almost as quickly as it escaped through the trocar.

In briefly summing up these cases, it will be seen three were due to tubercular disease of the lungs. Two of these

died, and one recovered as far as the pneumo-thorax was concerned.

One was presumably due to the rupture of an emphysematous bulla, and recovered without effusion of liquid.

And one was due to gangrene of the lung.

In two of the cases liquid was present, and in these pathognomonic signs were distinct.

In the remainder no liquid was present, and in these pathognomonic signs were absent.

Dr MACALISTER, after congratulating Dr Bushby on having been able to bring before the Society a number of cases representing distinctive etiological factors in the production of pneumo-thorax, referred to a case which he had seen when pathologist of the Royal Southern Hospital, in which a foreign body in the shape of a rabbit-bone had contributed to the condition by setting up in the first place a septic broncho-pneumonia, followed by gangrenous patches upon the pulmonary surface. The cases had an especial interest for Dr Macalister, insomuch that they demonstrated that gaseous collections produce effects upon the thoracic viscera which are similar to those produced by liquid effusions, and he directed attention to the circumstance that the heart in the right-sided cases became displaced, not only outwards but also downward, into the 6th interspace, owing to the bulging of the upper part of the right pleural sac, as he had explained in a paper read before the Society about two years ago.¹ He further directed attention to the way in which the heart becomes covered over (or buried, as Dr Bushby had expressed it) by the right anterior pulmonary border when displaced by left fluid effusions, either gaseous or liquid, and that it would explain the circumstance that the sounds were inaudible in the case cited by Dr Bushby. After referring to the fact that it is unusual to get such extensive pneumo-thorax in tuberculous cases as had occurred in those read by Dr Bushby, on account of the pleural adhesions which almost invariably exist in these cases, he related an example where an extensive liquid effusion had

¹ *Liverpool Med. Chir. Jour.*, 1896.

remained unrelieved for several months, owing to the exploring needle inserted in several places on several occasions happening to enter points of insular adhesion and withdrawing blood, which gave rise to the impression that a solid lesion was being dealt with; and he further referred to a clinical point which he had often noted, viz., that when large purulent collections, in which no evidence of bronchial fistula have previously existed, are treated by incision or aspiration, it not infrequently happens that pus immediately afterwards becomes expectorated, the tension having apparently prevented its escape by keeping some valvular opening in a closed condition, so preventing the occurrence of a pyo-pneumo-thorax.

Mr S. KELLETT SMITH drew attention to the fact that in one of Dr Bushby's patients malaria and tuberculosis had apparently been active at the same time. The old idea of the mutual exclusiveness of the two diseases, which still cropped up occasionally, had been quite negatived by advanced evidence.

Pathological and Microscopical Section.

MEETING HELD ON 11TH NOVEMBER 1897.—**MR PAUL**
in the Chair.

Mouse Favus.

DR ABRAM showed cultures of a case of mouse favus. He considered the parasite to be identical with that of human favus, and suggested that to multiply favus varieties which were alike clinically and bacteriologically was unnecessary.

The Relative Malignancy of Villous Tumours.

MR PAUL read a paper on this subject, and said:—Several years ago, before supra-pubic cystotomy was revived, I had under my care a case of villous tumour of the bladder in a woman, in which many attempts were made to remove the growth through the dilated urethra. Each recurrence was of a more solid and infiltrating character, and at last the bladder became fixed to the surrounding pelvic tissues, and so much involved in the growth that it was hopeless to attempt further operations. At the end of ten years since the commencement of the symptoms the patient died. The bladder was obtained; there still projected into it masses of fleshy villous growth, but the deeper appearance, both to the naked eye and microscopically, was that of an infiltrating carcinoma. The case is referred to by Mr Reginald Harrison in his work on Urinary Disorders, and microscopical specimens are submitted for examination. Since then, I have seen several cases in which villous growth has apparently undergone the same change, but I have never again had the opportunity of examining the bladder post-mortem.

At the present time my junior colleague, Mr Robert Bickersteth, has in my male ward two typical cases of this nature, which we hope to be able to investigate further. Both have been submitted to operation, and are now beyond such help, as the growth is too extensive and the bladder-wall too much infiltrated to offer any reasonable expectation of improvement.

With the exception of cases met with in an early and favourable condition for operation, the usual history of villous tumour of the bladder seems to be, that it tends to recur after imperfect removal, and with each recurrence to get a firmer hold on the bladder, assuming more and more the clinical features of an infiltrating growth. In regard to its malignancy, it behaves like rodent ulcer, which in its early stages is easily cured by complete removal, but in its later stages recurs with the utmost persistency.

In the rectum, I have had better opportunities of studying the nature of villous tumour, because in this part one makes a free removal, and the whole specimen is available for microscopical examination ; and if it assumes a malignant character, the entire organ can be excised, and the change from papilloma to carcinoma investigated.

Villous tumour in the rectum is supposed to be rare, but my experience would lead me to think that its presence here is not so uncommon as is ordinarily assumed. Unless one is actually looking out for a specimen, it is easy to mistake it for the more common carcinoma. The first specimen I met with was very large. It completely surrounded the bowel for about 3 inches, most of it being beyond the reach of the finger. It felt like a soft fungating cancer, and I did not recognise its true nature until I saw the long fringes of the portion cut off for microscopical examination float out in the fixing fluid. This patient was operated on two and a half years ago, 6 inches of bowel being removed. It is long since I had the opportunity of examining her ; but from a letter recently received, something seems to be wrong in the neighbourhood of the new anus, and it is not unlikely that an examination will reveal a malignant recurrence.

Since this case, I have met with no less than three more

villous tumours of the rectum. One was only the size of a walnut, and being completely removed, with a good margin of bowel, there is every reason to believe that the patient would have remained well had she not a few months subsequently died from a cause quite unconnected with the bowel.

The second case had been operated on by Mr Willett at St Bartholomew's three years before coming under observation. We could not obtain a detailed report on the nature of the substance removed, but it was polypoid, and believed to be innocent. At the time of my operation the growth was partly infiltrating, and the glands in the meso-rectum were the seat of secondary deposits ; yet a large part of the original tumour was purely and unmistakably villous,—not villous carcinoma, but true papilloma. The patient is still living, fourteen months after the operation, but, like all cases in which the glands are involved, has a recurrence.

The third case was operated on in my ward by Mr Robert Bickersteth. This, again, was partly pure villous tumour, while in another part it had become malignant. Here, then, are four cases of villous tumour of the rectum, two of which had assumed malignant characters before they came under my observation, though in my judgment there is satisfactory evidence that they commenced as pure and simple papilloma ; in another, it is probable that the same change has occurred ; whilst in the fourth, the disease was recognised sufficiently early, and removed sufficiently widely, to permit of a permanent cure.

Now, I can quite imagine a doubt in the minds of some as to the correctness of the diagnosis in these cases of villous tumour originating in the rectum, but I feel sure that a glance at the microscopical preparations will be sufficient to convince anyone. The absence of infiltration except in the malignant parts, the height of the columnar epithelium, the smallness and regularity of the nuclei, the great length and numerous branches of the fringes, and the delicacy and vascularity of the connective-tissue core, render the specimens so striking, and so unlike the most cylindrical-celled carcinoma, as to at once

arrest the attention of the most casual observer. Granted that these cases commenced as true villous tumour, it must be admitted that this growth in the rectum shows a marked tendency to become malignant.

Papillomata are included amongst the innocent tumours, but it seems to me a great mistake to draw a hard and fast line between innocence and malignancy : I firmly believe there is no such line of demarcation. In connective-tissue growths especially we recognise every grade, from those which are absolutely benign, through the locally recurrent, to the most malignant, and the same is true in regard to the epithelial tumours. Many papillomata and adenomata are perfectly innocent, but some have an innate tendency to become malignant, and thus occupy an intermediate position between the former growths and carcinoma. After all, if one excludes the common and infective warts, there are not many papillomata that one feels perfectly safe to leave untouched. On the skin, dry branched papillomata often remain inactive for a lifetime; in the mouth, they may continue for years unchanged; on the lips, they are more frequently the precursor of epithelioma; but whether on the skin, or on the mucous membrane of the respiratory, alimentary, or urinary tract, papillomata always show a certain tendency to become malignant.

A skin wart is the type of innocent papilloma. Epithelioma is the type of malignant papilloma. Villous tumour occupies the intermediate position. It is the recurrent papilloma which ends in carcinoma, just as recurrent fibroid ends in sarcoma.

The tendency to regard villous tumour as an innocent growth has an undesirable clinical influence. It encourages us to use the curette, snare, and ligature, in place of the knife, scissors, and cautery. It would, I think, be better to speak and think of it as a malignant papilloma,—a growth prone to recur, and certain, if time be given it, to assume a cancerous nature; but one which is, nevertheless, quite amenable to surgical treatment, if only that treatment is sufficiently radical.

*Two Structures of doubtful origin in the Vas Deferens of a
Human Adult.*

DR BUCHANAN, in describing these structures, said :—The portion of the vas deferens in which the above structures were found was removed, owing to its extreme implication in an old hernial sac.

The vas presented a small swelling, about half an inch long and spindle-shaped, the axis of the spindle corresponding with that of the tube. The widest transverse diameter of the swelling was half an inch. At the poles of the spindle the vas deferens was of normal diameter and structure. The enlarged portion was hardened carefully in several changes of pot. bichrom. solution, and finally transferred to spirit. On section transversely through the spindle, it was plainly visible to the naked eye that the swelling was due to hypertrophy of the muscular coats of the tube: two definite layers were quite distinct.

On further inspection, two small nodules were visible beneath the mucous membrane: one about $\frac{3}{8}$ inch in its longest diameter, extending around the tube, and about $\frac{5}{16}$ inch in transverse diameter. The other was barely visible, and not quite $\frac{1}{8}$ inch in either diameter. These nodules were easily distinguished from the general structure of the tube by the aid of a pocket lens.

Sections were cut in gum with a Cathcart mircotome; they were stained in Ehrlich's acid hæmatoxylin, washed in distilled water, and transferred to a fresh bath of distilled water, to which a few drops of a saturated solution of carbonate of lithium had been added. Left in this bath until they had changed to a good blue colour and the stain well fixed in the nuclei, they were transferred to a weak solution of eosin in absolute alcohol. After dehydration they were cleared in fresh oil of cloves and mounted in xylol balsam. On microscopical examination it was found that the sections presented a clear contrast stain.

Photo-micrographs were taken with Zeiss's vertical camera ; lenses Leitz 3 and Zeiss 2.

Incandescent gaslight provided the illumination passed through a tropœolin celloidin screen.

Edwards's orthochromatic plates, medium rapidity and well backed, were used for the negatives.

Positives were made by artificial light on Morgan & Kidd's enamel bromide paper, developed with metol-Hauff.

Microscopical Examination.—General.—A distinct hypertrophy of the muscular layers was noticed ; the muscle fibres were quite normal. An outer longitudinal and middle circular layers were in close proximity ; within the latter was a layer of connective tissue, separating it from an inner longitudinal and thin layer of muscle—the muscularis mucosæ—which was not hypertrophied ; upon it the mucous membrane rested (fig. 1).

The majority of the blood-vessels in all situations, and irrespective of size, showed marked thickening of their walls (fig. 3). The mucous membrane exhibited nothing abnormal in its general structure. The gland tubes showed no irregularity in arrangement ; the epithelium was normal, and there was no sign of proliferation ; goblet cells were present in large numbers (figs. 1, 4).

Supporting the gland tubes was a framework composed of fine fibrous tissue and branched connective-tissue cells ; in the meshes of this supporting framework small lymphocytes were present, and a large number of coarsely granular eosinophile cells, occasionally gathered into groups ; here and there they had penetrated the basement membrane of a gland, and lay free in the lumen.

Examination of the Peculiar Structures.—On examination of a number of sections the two structures were found to be isolated from each other, and almost on opposite sides of the tube (fig. 1).

Further, it was seen that they lay on separate planes in the long axis of the duct, so that section through the centre of one

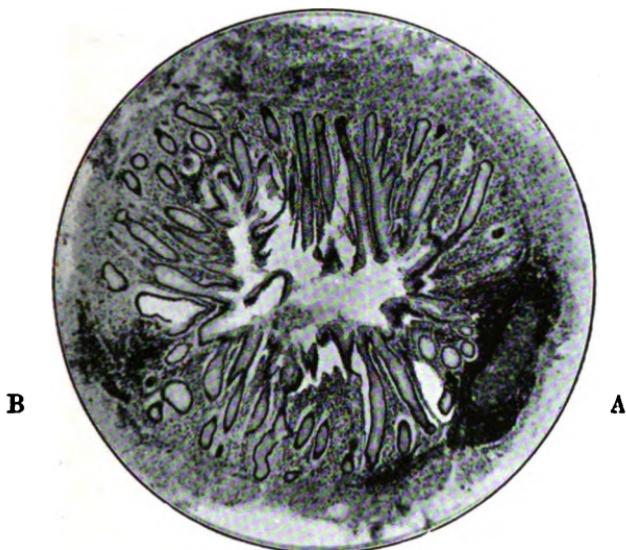


FIG. 1.—Transverse section of *Vas deferens*.

The mucous membrane is normal.

The outer layers of muscle are omitted.

A. Structure cut across, encapsulated by round-celled infiltration.

B. Section through the end of the capsule of another similar structure. !

(R. J. M. B.)



FIG. 2.—Transverse section of *Vas deferens*.

The growth is seen cut from pole to pole.

On the left a smaller growth is seen, as a bud from the main one, in transverse section.

(R. J. M. B.)



FIG. 8.—Section of growth B, Fig. 1, showing extension towards the lumen, and laterally to the right, where an outgrowth is seen in section. 'Arteritis proliferans' in submucous layer, all the vessels are thickened. (R.J.M.B.)



FIG. 4.—Growth A, Fig. 1, showing the cellular structure of the growth and the tubular arrangement. Enclosed within each tubule is a degenerate cell. (R. J. M. B.)

cut the other at a tangent (fig. 1). As both were identical in structural elements and arrangement, a description of one will suffice.

The growth was seen to be flattened concentrically with the lumen of the duct, but also lobulated like a piece of ginger. In some cases the main body was cut across, and on either side small branches were seen in transverse section (figs. 2, 3). Surrounding the structure was a distinct capsule, composed of a small amount of fine fibrous tissue, but chiefly of round cells. The capsule was laminated concentrically to the body, but inclosing each branch in a similar manner. At the periphery the round cells extended laterally for some little distance around the tube, inclosing fibres of the muscularis mucosæ.

Other prolongations passed inwards between the gland tubes, separating them, and reaching almost to the surface of the mucous membrane. On the outer side this fibro-cellular capsule was thinner, and had a definite margin, with no infiltration of other structures.

The main body was composed of large cells, faceted by mutual pressure. All the cells were degenerate and granular in appearance. Two classes of cells could be distinguished on close inspection : (a) large, more or less spheroidal cells, extremely granular, staining poorly, and in which only traces of nuclei were visible. Lying in clear spaces, these cells were individually surrounded by a ring of (b) smaller cells, not so granular or degenerate, and with nuclei which stained fairly well. I came to the conclusion that the large central cells were a more degenerate form of those surrounding them, and derived from them, or in some places the whole ring was composed of cells similar to (a), and equally degenerate; no distinction could be made out.

This arrangement of the cells showed that the structure was essentially tubular.

The majority of the tubules were cut transversely; a few, however, could be traced in their longitudinal axis (fig. 4).

Hence I concluded that these structures were small collections of degenerate tubules, or a folded single and long tubule,

pressed close together by reason of the surrounding capsule. Their general histology reminded one of parathyroid tissue, or the small interlobular bodies of the pancreas.

I can find no record of such structures having been previously described. I cannot offer any definite conclusion as to their primary origin. The most likely explanation is that they are developmental remains, *i.e.*, from the Wolffian body. They may probably be encapsulated *vasa aberrantia*.

Sensory Organs of Voluntary Muscle.

PROFESSOR SHERRINGTON showed specimens to illustrate the modes of ending of sensorial nerves in voluntary muscles. He had in 1893 succeeded in demonstrating that the voluntary muscles received a large number of sensory nerve fibres. In the nerve trunks supplying most of the limb muscles, about one-third of the nerve fibres were sensory. He now brought forward specimens to demonstrate the actual modes of termination of these sensory nerve fibres in the muscles. He stated that, as the microscopic specimens laid before the meeting clearly showed, there were at least three different kinds of sensorial end organs in the muscles. The first of these was the muscle spindle, which had now been proved to be sensorial, although at first supposed to be an embryonic focus, or a pathological new formation. Specimens were demonstrated which showed (1) that nerve fibres from the spinal root ganglia entered and ended in these muscle spindles; (2) that the terminal arborisations of these nerve fibres were much larger than, and quite different from, motor end plates, and were distributed to the peculiar intrafusal muscle fibres at the equator of each muscle spindle. The second form of sensorial ending in voluntary muscle was the Golgi 'tendon organ.' Preparations exhibiting the terminal arborisation of the nerve fibres in these end organs were shown, confirming the original description given by Golgi. The third form of sensorial ending in voluntary muscle was the Pacinian corpuscle. These, as previously described by Professor Sherrington, were found in

two situations in muscle: (1) near septa or aponeuroses; (2) embedded in the thickness of the muscular tissue proper. Some of the Pacinian corpuscles were large; others were small, and possessed few lamellæ in their capsule. The nerve fibre to this Pacinian corpuscle was always a large myelinate fibre. Muscles in which they were observed were muscles of the limbs and muscles of the larynx. Search for them in the eye muscles had not discovered any there. Professor Sherrington drew attention to the interesting fact that the muscle fibres inside the spindles, unlike the ordinary fibres of the muscle, did not undergo degeneration after section of the whole nerve of the muscle. Specimens were shown in which the muscle fibres inside the spindles were not shrunken in size or degenerate after the nerve of the muscle had been severed for a period of nearly three years, no regeneration or reunion of the nerve having been allowed. The capsule of the spindle appeared a little thickened, and the periaxial space appeared a little reduced, but the intrafusal muscle fibres were undegenerate, although the muscle elsewhere was highly degenerate. Professor Sherrington found in this support for a view he had previously urged—namely, that the intrafusal muscle fibres belonged to the 'red' variety of muscle fibre, which it was well known atrophied on nerve section much more slowly than did the large white variety of muscle fibre. Every muscle, as Grutzner and others had shown, was composed of both red and white fibres, and the former remained comparatively unatrophied for a long time after nerve section. The communication was illustrated by micro-photographs.

Specimens.

Mr NEWBOLT: Sarcoma of Femur.

Dr BARRENDT: Rodent Ulcer and Cirrhosis of Liver in a young child.

Mr S. KELLETT SMITH: Symmetrical Affection of Fingernails, Large Hernia reaching down to the knees, and Exudation from case of Plastic Bronchitis.

Dr GIVEN: Skiagrams of Bullet in Finger.

Dr ABRAM: Plasmodium Malariae, crescent form.

Mr THELWALL THOMAS: *Trichocephalus dispar* found in vermiciform appendix ; removed for recurrent appendicitis.

Mr R. W. MURRAY: Spinal Column two months after forcible straightening. Professor BOYCE, Mr NEWBOLT, Drs LESLIE ROBERTS, WARRINGTON, A. W. CAMPBELL, ABRAM, and BUCHANAN discussed various points raised.

MEETING HELD ON 9TH DECEMBER 1897,—**Mr PAUL** in the Chair.

Changes in the Spinal Cord in Pernicious Anæmia..

DR A. W. CAMPBELL read a note on the Changes in the Spinal Cord in Pernicious Anæmia. The patient was a middle-aged female. The spinal cord in the sacral region was healthy. In the lower part of the lumbar enlargement two small patches of absolute sclerosis appeared in the centre of the posterior columns, one on either side of the posterior median fissure. In the dorsal region the field of sclerosis gradually increased in size, but remained more or less confined to the postero-internal columns, the whole of which it affected, with the exception of a zone of fibres at the periphery and another zone adjoining the posterior commissure. In the cervical region the change was most extensive, not only the postero-internal, but also to a certain extent the postero-external columns being involved. As in the dorsal region, the sclerosis was separated from the periphery and from the grey commissure by a zone of normal fibres, and at no point in the cord did the sclerosis reach the posterior cornua. The remaining fields of the cord were healthy. The sclerosis was traced up to the nuclei of the columns of Goll and Burdach, but the cells of these nuclei had undergone no important change, nor were the internal arciform fibres atrophied. The posterior spinal roots and some posterior root ganglia and peripheral nerves which were examined pre-

sented no noteworthy alteration. The literature on the subject was referred to, and theories concerning the origin of the spinal change were discussed. A lantern demonstration was given and microscopic specimens were shown.

Case of Acute Pancreatitis.

DR J. WIGLESWORTH exhibited this specimen. The tissues investing the pancreas were thickened, brawny, and inflamed, and on section drops of pus exuded here and there. The pancreas itself was markedly enlarged in all directions, and showed on section a pale yellow colour, the septa borders being distinctly darker than the gland tissue. Consistence diminished. The inner wall of the pancreatic duct was reddened.

Microscopically there is shown great proliferation of small round cells, alike in the investing tissues of the organ, along the trabeculae and blood-vessels, and between the alveoli. The cells of the alveoli are blurred, and in osmic acid specimens they are found laden with coarse black pigment granules. The intercalary and smaller ducts are filled with debris, and many of them have lost their columnar epithelium. The blood-vessels are congested.

The gall-bladder was distended, and contained a quantity of yellowish, semi-purulent, foul-smelling liquid.

The wall of the gall-bladder was thickened, particularly the mucosa, and on the surface of this were numerous small circular shallow erosions. The liver was a trifle pale and soft, but otherwise normal, as were also the rest of the abdominal viscera. The stomach and small intestines were distended with gas. Thoracic viscera normal.

Taken from a man (M. G) aged 53, who died in Rainhill Asylum, 18th March 1897. He had had an attack of jaundice, apparently of a catarrhal nature, about a year before his death. He had been in somewhat indifferent health for some little time, but did not exhibit definite symptoms of any kind until about forty-eight hours before death, when he somewhat suddenly developed vomiting, with abdominal distension, and rapid collapse ensued.

Case of Hæmorrhage into the Pancreas.

DR J. WIGLESWORTH exhibited this specimen. The pancreas is somewhat enlarged, diminished in consistence, and markedly reddened. This is particularly the case in its central third, where the gland is somewhat swollen and its colour is dark red.

In several places along the periphery of the organ are distinct hæmorrhagic areas about 1 c.m. in diameter; these are particularly marked towards the head. Microscopically the cells of the acini do not present any definite departure from health, and end in the central deeply-reddened area; they appear partly normal, except that in places they appear somewhat flattened. There is an abundant fibrinous exudation, with numerous contained red blood corpuscles, both beneath the capsule and along the trabeculæ, and the morbid change appears to have been a sanguineous effusion, possibly of inflammatory origin, beneath the capsule, which has forced its way down the trabeculæ between the acini. The distinct hæmorrhagic areas above referred to contain ordinary black blood clot.

In the omental fat around the pancreas were numerous hæmorrhages; and in addition, there were patches 1 to 2 inches in diameter of a dull grey colour and lustreless aspect, and which appeared to be areas of fat necrosis.

Foci similar to these, but of smaller size, were scattered throughout the omentum, which was richly laden with fat. The stomach and intestines were considerably distended.

The gall-bladder contained about thirty calculi, mostly of small size. The liver was normal, as was also the rest of the abdominal viscera. The heart was somewhat large and fatty, but there was no valvular disease. The brain presented the ordinary signs of general paralysis. The specimen was taken from an obese female general paralytic aged 37, who died in Rainhill Asylum on 27th Oct. 1897. Although the brain disease was well advanced, it was not actively progressive, and she was able to go about.

On 24th Oct. vomiting rather suddenly set in, which gradu-

ally became urgent, and the only action of the bowels that could be obtained was by means of enemata; there was great distension of the abdomen; collapse rapidly set in, and she died three and a half days from the onset of the vomiting. The symptoms, indeed, closely resembled some form of intestinal obstruction, but the vomiting was never faecal, and the post-mortem examination entirely negatived this.

Lymphadenomatous Spleen.

DR J. WIGLESWORTH exhibited this specimen. The spleen is considerably enlarged in all diameters, as much in breadth as in length, and when fresh weighed $14\frac{1}{2}$ oz. Its consistence was very firm. Scattered throughout the whole of its substance are numerous whitish nodules, varying in size from a franc to a small shot, many of the larger of these nodules being obviously formed by the coalescence of several small ones. On the external surface of the organ these nodules appear as small circular elevations. The nodules are of firm consistence, and even when quite fresh cut almost like cartilage, without any sign of softening in the centre.

The nodules are so numerous as to constitute fully one-half of the entire splenic substance.

Microscopically the nodules consist of a densely packed, finely fibrillated fibrous tissue, in which a few small blood-vessels can be seen running. Along the margins of the nodules are small round cells and a fringe of haematoïdin granules, and in the neighbourhood are numerous multi-nucleated giant cells. The nodules evidently have their origin in the Malpighian corpuscles. There is general hyperplasia of the reticulum of the splenic tissue.

The retro-peritoneal glands in the epigastric region were much enlarged, forming a mass the size of two closed fists.

The mesenteric glands were also enlarged. The glands were all very firm on section, some of them cutting almost like cartilage, and none of them showed any sign of softening. The bronchial glands at the root of the lungs were also somewhat

enlarged, but there was no enlargement of the cervical inguinal or axillary glands.

The liver was slightly fatty, but otherwise healthy, and the kidneys were quite healthy. Both lungs contained numerous nodules, similar to those in the spleen, from the size of a pea downward; they were scattered irregularly about the lungs, but were most numerous at the apices. They presented the same firm consistence as the nodules in the spleen, and showed no sign of softening anywhere.

The specimens were taken from a female patient aged 38, who died in Rainhill Asylum on 25th August 1897, after a residence of twelve years.

For some months prior to her death she had been suffering from wasting, night-sweats, and fever of somewhat tubercular type, and presented, indeed, a congeries of symptoms closely resembling tuberculosis.

Cerebral Asymmetry.

DR J. WIGLESWORTH exhibited this specimen. From female epileptic idiot, aged 15 at death. Circumference of head 18 inches. Skull asymmetrical, the right half being considerably smaller than the left; bones of right side also thicker.

Right anterior cerebral artery smaller than left, but remaining vessels normal.

Right hemisphere little more than half the size of left.
Encephalon, 800 grams.

Right hemisphere, 210.

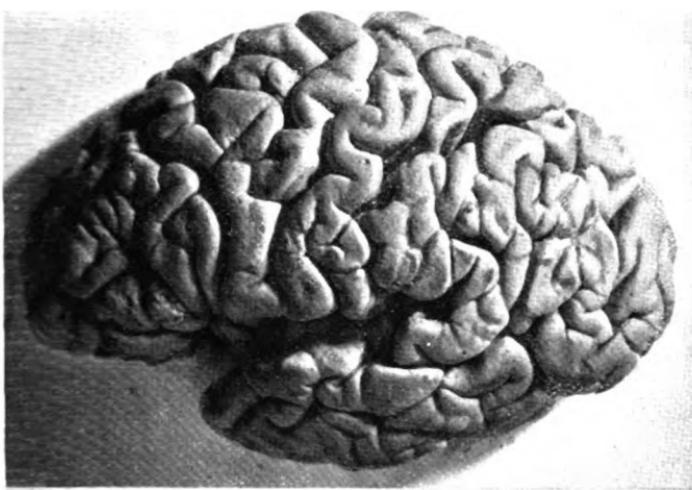
Left hemisphere, 417.

Left hemisphere normal.

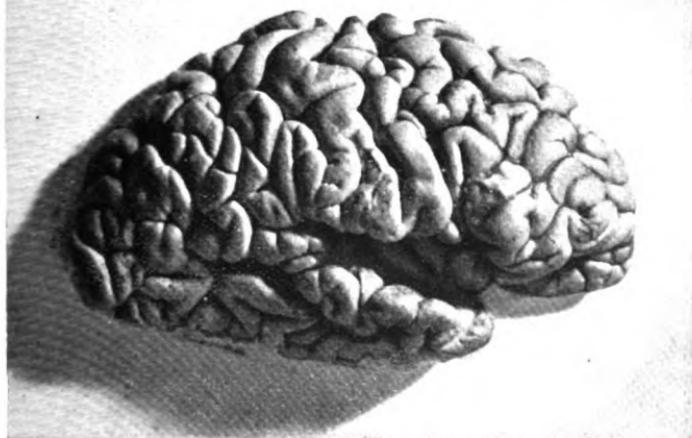
Right hemisphere also apparently normal, except for its small size in all diameters. Gyri and sulci arranged fairly typically.

Convolutions were for the most part well in contact, and not separated by widely gaping sulci, as if much wasting had taken place. Cortex reduced. Right lateral ventricle borders greatly increased. Basal ganglia apparently normal, except for small size.

Left side.



Right side.



[To face page 222.

Consistence much increased, and microscopic examination showed definite increase of neuroglia element; also diminution in number of nerve cells as compared with opposite side, and evidence of degenerative change.

Asymmetry not confined to hemisphere, but was pronounced along crus, pons, and medulla, owing to diminution in size of great pyramidal tract, substantia nigra, lemniscus, red nucleus, and left inferior cerebellar peduncle. Right pyramidal tract reduced to about half size of left all along.

In spinal cord asymmetry marked the left half (that opposite wasted hemisphere), being markedly smaller than right. Shrinkage and partial sclerosis of left lateral pyramid; right anterior pyramid also reduced in size. Left lateral cornu also diminished, particularly at cervical enlargement.

Spinal asymmetry can be followed to 12 dorsal; not much sclerosis, but healthy fibres reduced in size.

The small size of the right hemisphere was probably due to an arrest of development occurring in early life.

A new Micro-Organism.

DR J. HILL ABRAM described and exhibited a new micro-organism which he had found in the blood of a patient suffering from lymphadenoma.

Iron in the Liver and Spleen in Cases of Malaria.

DR J. E. DUTTON read a note drawing attention to the marked increase in the quantity of iron in the liver and spleen in cases of malaria, there being five times the normal amount in the liver and ten times the normal amount in the spleen in two cases examined by him.

The following Specimens were also exhibited :—

DR BRADSHAW: Tuberculous Suprarenals, from a case of Addison's Disease.

MR KELLETT SMITH: Fibroma, with Silk Ligature as Nucleus.

Dr WARRINGTON: Sarcomatosis of Ovary, Thyroid Kidney, and Intestine, from a child.

Mr NEWBOLT: (1) Carcinoma of the Tibia (Secondary); and (2) Multiple Neuromata.

Mr RUSHTON PARKER: Carcinoma of the Male Breast, Stomach, and Lymph Gland; Tuberculous Peritonitis, Macroglossia, and Nævi of Ear and Scalp.

Mr THURSTAN HOLLAND: Radiographs.

Dr BUCHANAN: Pinguecula (Epithelial).

Mr F. T. PAUL: Sections of Early Human Embryos, showing stages in the development of the Wolffian body.

Mr PAUL, Professor BOYCE, Dr WARRINGTON, Dr BRIGGS, and Dr LOGAN took part in the discussion.

New Drug.

Ergot Aseptic. Parke, Davies & Co.

We have often drawn the attention of our readers to the elegant and therapeutically active drugs manufactured by this firm. They have now favoured the medical profession with an excellent preparation of an old drug, which cannot fail to meet with general approval. Every practitioner of much experience must have been frequently disappointed with the numerous preparations of ergot and ergotin on the market, but when the preparations are active the good effects are so evident that more or less confidence is universally held in the drug. Ergot is chiefly required in urgent cases, and therefore the preparation employed should be above suspicion. We therefore welcome this valuable addition of aseptic ergot to our therapeutic armamentorium. The preparation is non-alcoholic, sterilised, concentrated, active, permanent, non-irritating, and each dose is put up in a hermetically-sealed bulb. The ergotinic and extractive matters have been removed, so that nothing but the therapeutically active ingredients remain. They recommend that the injection should be made into the gluteal or other large muscle. This is the best and most convenient preparation of ergot with which we are acquainted, and we think that every practitioner should have it in his possession. So long as the bulbs are not broken, the drug will remain permanent.

THE
LIVERPOOL
MEDICO-CHIRURGICAL
JOURNAL,

INCLUDING THE
PROCEEDINGS OF THE LIVERPOOL
MEDICAL INSTITUTION.

No. 35.

JULY 1898.

Price 3/6.



LIVERPOOL:
MEDICAL INSTITUTION, HOPE STREET.
LONDON: H. K. LEWIS, 186 GOWER STREET.

PRINTED BY NEILL AND COMPANY LTD., EDINBURGH.

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THE
LIVERPOOL
MEDICO-CHIRURGICAL JOURNAL.

Transactions of
The Liverpool Medical Institution.

SESSION 1897-98.

SEVENTH ORDINARY MEETING, HELD 6TH JANUARY 1898.

Two Cases of Mules' Operation of Evisceration of Eye. Insertion of Spheres. By T. H. BICKERTON, M.R.C.S., Ophthalmic Surgeon, Royal Infirmary, Liverpool.

CASE I.—*Mules' Operation of Evisceration, with insertion of a glass sphere, in case of painful blind eye, after recent penetrating wound.*

Conjunctiva and sclerotic sutured together.

Dull aching pain in eye for 12 hours after operation.

Local reaction (lid swelling) considerable; gone by 11th day.

Patient up on 11th day.

Firm cicatrix and good movement.

Cosmetic effect admirable.

William B., labourer, age 33; general condition good.

History of Accident.

Right Eye.—Nov. 14, 1897.

While at work, was struck in the eye by a flying nail, but does not think any fragment remained in it.

There was an extensive lacerated wound of cornea and sclerotic—total absence of fundal reflex from vitreous haemorrhage, with absolute blindness. The injury and immediate blindness were a great shock to him: he vomited almost continuously for 15 hours after, and was mentally prostrated.

Mules' operation was advised and declined, the patient also preferring home to hospital treatment. Constant application of iced perchloride lotion (1 to 4000) ordered.

Nine days later patient returned to hospital, complaining that he had had no sleep since the injury, owing to stabbing pain, swelling and inflammation of the eye.

Present condition.

Nov. 23, 1897 (on admission to hospital).

Right Eye.—There is much chemosis and intense conjunctival congestion: the cornea and lens are slightly hazy: there is no fundal reflex; and on oblique examination, a greyish-white exudation is seen lining the vitreous cavity. Vision nil.

Left Eye.—Vision normal.

Operation.

Right Eye.—Nov. 25, 1897.—Mules' operation performed; lacerated edges of sclerotic wound completely removed; no lateral sclerotic incisions made; no piece of steel found; a medium sized glass sphere introduced; conjunctiva and sclerotic sutured together with chromicised catgut; loose iced antiseptic pads (1 in 5000) perchloride of mercury lotion applied constantly.

Nov. 26 (1st Day).—During the early part of the night had a good deal of pain; morphia, gr. $\frac{1}{4}$, given hypodermically, after which he slept. The pain lasted 12 hours, and was of a dull aching character "in the very centre of the eye." It has quite gone this morning.

Swelling.—Considerable oedematous swelling of upper and lower lids. M. T. 97·8°; E. T. 99°. P. normal.

Nov. 27 (2nd Day).—Slept well last night, as when in usual health ; has had no such sleep since accident.

Pain.—Has had absolutely no pain last night or this morning.

Swelling.—Considerable swelling and marked ecchymosis of right upper eyelid.

Discharge from the eye is serous, and slightly blood-stained. M. T. 98°; E. T. 98·8°. P. normal.

Nov. 28 (3rd Day).—*Sleep*.—Has slept well.

Pain.—Has had no return of pain.

Swelling.—Rather more than yesterday.

T. 98·4°. P. normal.

Nov. 29 (4th Day).—*Swelling*.—Slightly less than yesterday, and chiefly confined to the upper eyelid, on which there is a slight pustular eruption. The conjunctiva is considerably more swollen, and protrudes slightly between the eyelids. The discharge is serous. T. and P. normal.

Dec. 2 (7th Day).—No pain or discomfort whatever. Swelling of eyelids and conjunctiva is rapidly subsiding. T. and P. normal.

Dec. 3 (8th Day).—The swelling has almost entirely disappeared ; the conjunctival oedema is less, and it no longer protrudes through the palpebral aperture ; the discharge is less, and still serous.

Dec. 6 (11th Day).—The swelling has entirely gone. Patient allowed out of bed.

Dec. 12.—Stitches removed.

Dec. 22.—Patient discharged from hospital.

Jan. 4, 1898.—Two flattened conjunctival granulations snipped off.

Result.—Jan. 6.—Good stump, with good movement ; no discharge ; artificial eye inserted.

May 26.—Has worn the artificial eye regularly since last entry, with comfort and satisfaction to himself, and pleasure to his friends.

CASE 2.—*Mules' Operation of Evisceration, with insertion of a silver sphere, in case of painful eye, after penetrating wound.*

Conjunctiva and sclerotic sutured together.

Much “cutting” pain in eye for 24 hours after operation.

Local reaction (lid swelling) very slight.

Patient up on 5th day.

Firm cicatrix and good movement.

Cosmetic effect admirable.

William H., sea-captain, age 46; general condition good.

History of Accident.

Right Eye.—April 22, 1897.—While at sea, received an incised corneal wound by flying chip of chisel, causing prolapse of iris and traumatic cataract.

Treatment until arrival home nil. Has had much pain.

Condition when first seen, Nov. 6, 1897.—A transverse corneal wound, with incarceration of iris, traumatic cataract, old iritis, and ciliary congestion. There is considerable pain, with ciliary tenderness.

V.=good perception of light; poor projection. Tension normal.

The electro-magnet failed to indicate the presence of any metallic foreign body within the eye. Sedative measures were adopted.

Nov. 24, 1897.—As the eye remained very irritable, and perception of light was lost, while pain continued, operation was advised.

Operation.

Right Eye.—Nov. 25.—Mules’ operation performed; no lateral incisions in sclerotic made; no steel discovered; a medium-sized silver sphere introduced; conjunctiva and sclerotic sutured together with chromicised catgut; loose iced antiseptic pads (1 in 4000 perchloride of mercury lotion) applied constantly.

Nov. 26 (1st Day).—Had a bad night—little or no sleep;

vomited frequently for 25 hours after the operation; much "cutting" pain in the right eye local; reaction very slight; scarcely any lid swelling; no discolouration. P. 80. T. 101.2°.

Nov. 27 (2nd Day).—Feels very comfortable; no increase in swelling. P. 72. Morning T. 99.2°; Evening Temp. 100°.

Nov. 28 (3rd Day).—P. 72. T. normal.

Nov. 30 (5th Day).—P. 86. Patient got up to-day.

Result.—Jan. 7, 1898.—Good stump, with good movement; firm scar, with projecting lateral angles; some conjunctival granulations protruding from the inner part of the wound were snipped off to-day.

May 17.—Has worn an artificial eye for several months with great comfort. The projecting lateral angles of the sclerotic are becoming rounded off from (?) pressure of the artificial eye. He states that friends do not recognise the condition.

Two Cases of Acute Bright's Disease. By Dr WILLIAM CARTER.

TWO patients, who were said to have been previously healthy, were exposed on the same day, viz., Sunday, January 13th, 1895, to a similar cause of illness. The one, a young woman aged 18, got her feet very wet from walking in the snow, and did not change her boots; the other, a young man aged 19, was immersed up to the knees in water, and dried his clothes on him at the fire instead of changing them. The effects produced by this exposure were different in the two cases. The girl complained of chilliness, headache, and nausea on the following day, did not become oedematous, but in a few hours afterwards was said to have had a fit, which lasted for some minutes. After a temporary recovery, attacks of the same kind recurred at frequent intervals till her admission in a comatose condition at 11.30 on the 15th.

The young man complained of facial neuralgia on the Sunday evening; on the following morning, had general headache, vomiting, much pain in the small of the back, much swelling of the face, and commencing oedema of the feet.

When admitted, the girl was deeply comatose, and at short intervals had very severe convulsions, in which the tongue was at first badly bitten. There was no consciousness between the attacks, and during them loud stertor, an intense congestion of the face, and the discharge of much blood-stained froth from between the swollen lips. Convulsions occurred at 11.35 A.M., 12.45 P.M., 1.20, 2.15, and 2.40. The temperature just after admission was 103·4°. Pulse 112. Respiration 48. Pupils contracted.

The young man was enormously swollen all over the body. It was impossible to see one eye because of the oedema of the face, and the other could scarcely be exposed, and this only very slightly. Temperature on admission 101°. Pulse 82. Respiration 24.

The note made by the clerk of the character of the pulse in the girl's case was "full and tense"; in that of the boy, "regular, good tension." I find no note of the state of the pupil in the latter.

In each case the bowels were said to have been opened before admission.

The first urine obtained was very albuminous in both. In the girl's case it is noted as $\frac{1}{3}$, in the boy's as $\frac{1}{2}$. Estimations made a fortnight later gave from 3 to 2 grammes per litre for the latter.

I asked the gentlemen who were around the bed, and all of whom have now for some time been in active practice, for their ideas as to treatment. A reply somewhat to the following effect was given in the girl's case:—"She cannot swallow, so that medicine cannot be given by the mouth. Probably the best way would be to produce free sweating, with the view of eliminating poisons by the skin."—"How would you do this?"—"I should inject pilocarpine hypodermically," was the reply. Much conversation took place around the bed. It was pointed out that medicines could be given by the rectum and by inhalation, so that we were not confined to the hypodermic method. Nothing was said as to any untoward effects of pilo-

carpine until we retired to a safe distance from the hearing of nurses and patients. When the conversation was resumed, I asked the gentleman who suggested it if he had ever watched the effects of the hypodermic administration of pilocarpine: if he had remarked the very free salivation and outpouring of bronchial fluid that occurred before sweating was induced; and if, in his opinion, it would be wise to bring such a condition on in one who would be perfectly unaware of the presence of the fluid in her bronchi: if, in short, in the efforts to cure by that method, we should not be as certain to kill as if the head were held under water, or a rope tied tightly round the neck? We agreed, finally, that it would be better not to give pilocarpine, or indeed anything else, simply because it was recommended by so-called 'authorities' as a remedy for uræmia, but to consider the girl's condition, and try and combat the causes that led to it, in a way that at least should not be more harmful than the causes themselves. We decided that we might perhaps act wisely by lessening the morbid irritability of the brain by injecting a solution of bromide of potassium into the rectum, notwithstanding that one of the authorities had said that potassium salts were the cause of the convulsions in uræmia. We decided, further, that as the girl's urine was almost suppressed, and that probably many urinary products were not being oxidised into harmless urea, we could not do harm by giving oxygen freely by inhalation, notwithstanding that it had been stated that oxygen thus administered would not increase oxidation, and that the only way to effect this was by putting the patient into compressed air. She had had a very severe convulsion at 2.15, and another at 2.40, both of which we had seen. She had been comatose since the day but one previously, and similar convulsions had occurred during the whole of the intervening period, at intervals which were getting shorter and shorter. There seemed no reasonable ground, therefore, for believing that things would mend if she were let alone; and, on the other hand, it would seem reasonable to conclude if, immediately on the application of a given

agent, the interval between the fits was at first greatly prolonged, the fits themselves much less violent, and before long absent altogether, that there would be a relation as of cause and effect between these two sets of facts. Such was the case. Oxygen was administered at 2.50. Immediately the convulsion which began at 2.45 had ended; and though there had been one only 15 minutes previously, there was not another for nearly four hours, and that one of much diminished severity; not another for $26\frac{1}{2}$ hours, and that one very slight indeed; and then no more. As I remarked, the pupils were much contracted. Clearly, therefore, an agent which, as in several striking cases which I have published, is very useful where the all-round effect of the retained urinary products is an atropine-like poisoning, with widely dilated pupils was not admissible. I allude, of course, to the hypodermic injection of morphine. Where such effects are produced, it will quickly and favourably affect the symptoms. Where the all-round of symptoms more resembles opium poisoning, as it does in the great majority of cases, it would almost certainly kill.

The relation between urea, the final product of oxidation of urinary products, and specific gravity, in the girl's case, was noteworthy. On the evening of the day of her admission, as no urine had been passed, a catheter was introduced, and five fl. oz. were obtained. Its sp. gr. was 1026. Yet the proportion of urea, on a careful estimation, was only 4.5 grs. per oz. It seemed, therefore, as if the sp. gr. was maintained at so high a point by the retention in solution of products of metabolism of a lower degree of oxidation than urea, for that clearly could not account for it. During the following 24 hours the total urine was 33 fl. oz.; urea more, viz., 5.7 grs. per fl. oz., or 187 grs. in all, and the sp. gr. less, viz., 1024. The next day the amount of urine was 38 fl. oz.; urea, 6.1 grs. per fl. oz., or 232 grs. in all; sp. gr. 1020. Thus, when the quantity of urea was 4.57 grs. per oz., the sp. gr. was 1026; when 5.7 grs. per oz., 1024; and when 6.1 grs. per oz., 1020—urea highest in amount, sp. gr. lowest, and urea lowest in amount, sp. gr. highest—confirming what I

stated here a few meetings since, that urea and sp. gr. by no means rise and fall together, and that the former cannot be calculated from the latter. I must not omit to state that I am indebted for all these estimations, and for many more results of examinations than I have here introduced, to Dr Elliot; and that the bedside notes were made by Dr Winstanley.

With reference to the young man, I have only to observe that he got well—as I believe, who believe in drugs when properly administered—by a method of treatment which, in my opinion, would have killed the young woman. He had all his wits about him, could tell at once if more saliva was secreted than he liked, and could at once eject it. Infusion of jaborandi was therefore prescribed for him, and its action aided by solution of acetate of ammonia and simple hot drinks. The skin soon acted freely, after which there was a speedy increase in the quantity of urine, which rose from 37 fl. oz. on the 19th to 177 fl. oz. on the 22nd: albumin, however, continued in considerable amount. Thus there were 4 grammes to the litre on 17th of February (quantity of urine 42 fl. oz., stools 4), and 3 grammes to the litre on the 18th (quantity of urine 51 fl. oz., stools 2). Oil of turpentine and hazeline, cautiously increased to 5 m. of the first and 3 ss. of the second on the 22nd, were followed by, if they did not cause, a steady diminution, and he continued to take them until he was dismissed, apparently well, and with the merest trace of albumin in the urine, on May 8th. Other questions may arise. Did the dropsy preserve the boy from the terrible uræmic convulsions, which the girl, who had no dropsy, experienced? I cannot tell. The dropsical fluid is said, as it seems to me on entirely insufficient evidence, to be thus preservative against the more serious incidents of uræmia, which incidents, it has again been alleged, are apt to occur if a rapid reabsorption of this poison-containing serum, takes place. If this were true, the boy certainly ought to have had convulsions, for his dropsy was greater and its reabsorption more rapid than I think I ever saw before; yet on the day when he might have been supposed

to be in the greatest danger, from the passage of the largest quantity of dropsical fluid into the blood, and hence onward to the kidneys,—on the day, that is, when he passed the enormous quantity of 177 fl. oz. of urine,—the note made was “feeling much better.” I may say that I have often examined these affections, both chemically and in other ways, and they seem very simple and harmless. One striking fact may be mentioned. Up to January 28th, his pulse rate varied from 48 to 52, then rising somewhat suddenly, and continuing henceforward till the day of his discharge, from 70 to 80.

I had then, and have now, no doubt that the girl’s life was saved by the oxygen, and think it highly probable that the result of its administration was the oxidation of intermediate products between proteids and urea which were poisoning her. When such retained poisons cause a wide dilatation of the pupil, or are similar to atropine in their action, the hypodermic injection of morphia is useful, apparently by physiologically antagonising them. Of the utility of this method in suitable cases I have published several striking examples. In the case under consideration, it would probably have done harm. What I desire to emphasise is the unwisdom of injecting pilocarpine subcutaneously when the patient is comatose; or, indeed, of adopting any one method of treatment in every case, when the conditions are so complex and various as they often are in uræmia.

The practical point of most importance was, that though the treatment of these two cases was so different, the result was similar. Both patients recovered.

Dr MACALISTER regarded oxygen as a most valuable agent in the treatment of uræmic coma or convulsions, and he considered that the recoveries (some of them immediate, so far as the convulsions or coma were concerned) were attributable to its use in a number of cases in which he had employed it. He referred to several such cases, including one of puerperal eclampsia, in which the immediate danger had been averted by

oxygen inhalations, and the patients had ultimately completely recovered from the renal disease.

On Inoculations with T.R. Tuberculin.

DR STOPFORD TAYLOR showed three patients suffering from lupus vulgaris, all of whom had benefited considerably by inoculation with the new tuberculin.

Unfortunately this improvement was illusory, although the treatment was continued until the end of March.

The cost of the remedy for four patients during a six months' course amounted to nearly £15.

Dr BUCHANAN noticed that in one of Dr Taylor's cases, during the treatment, the patient developed a bad cough, and had an attack of haemoptysis. He wished to know if any tuberculosis of the lung had been diagnosed, and if the sputum had been examined for tubercle bacilli?

Was it possible that there had been latent pulmonary tubercle, which had been affected by the inoculations, local reaction resulting in the haemoptysis, and producing the other clinical signs? The short immunity produced by the tuberculin was important in upholding the idea held by Dr Buchanan, that if tuberculin is to do good at all, it must be used for a very prolonged period.

Dr ABRAM pointed out that in Koch's original paper it was stated that complete immunity was only obtained after the administration of large doses of tuberculin T.R. Koch himself, as a rule, increased the dosage until 20 mg. solid substance were injected, and then ceased, or only repeated the dose at long intervals. Dr Abram suggested that Dr Taylor should go on with his cases until this maximum dose was reached.

Dr LESLIE ROBERTS said that the treatment of lupus by

tuberculin rested on the assumed possibility of increasing the natural resistance of the organism, so as to render it immune to the tubercle bacilli. He had treated four cases of lupus by this method. There could be no doubt that the new tuberculin did exert a favourable influence on the course of the disease, but this influence depended on conditions not yet clearly defined. It was most marked when the lymph and blood-vessels most actively participated in the tubercular process. In the dry, non-irritative forms of the disease, when the tubercle nodules seemed to be more or less insulated by inert tissue, the improvement was far less obvious. The local changes consisted in progressive shrinking of the tissues in the immediate vicinity of the tubercle nodules, and in the arrest and healing of ulceration. The reduction of oedematous swelling of the lips and gums was very remarkable. At present we had no exact information as to the histological changes effected in the tubercle nodule by the new tuberculin. One very great objection to the use of the old tuberculin had now been removed, namely, that no constitutional disturbance was required in order to obtain local improvement. He would not express any opinion as to the ultimate value of the new tuberculin until a sufficient number of facts had been collected, and for this time was necessary.

Two Cases of Bladder Growths diagnosed by Cystoscope and Operated upon. By W. THELWALL THOMAS, F.R.C.S., Hon. Asst.-Surgeon, Royal Infirmary.

THE following two cases are brought forward to illustrate the advantages derived from the use of the electric cystoscope in the diagnosis of, otherwise, doubtful conditions of the bladder.

When the cystoscope was originally introduced into surgery it was quickly included amongst that class of instruments dubbed 'surgical toys.' This was, no doubt, chiefly owing to its imperfections, and to the unwieldy, but then necessary, primary battery, as large as a Gladstone bag.

In recent years this has been altered: the cystoscope of Leiter & Fenwick is easy to manipulate, and the invention of small portable secondary batteries, (accumulators), has rendered the examination of the bladder a proceeding of comparative simplicity.

The cystoscope is particularly useful when all other means of examination have failed to make a definite diagnosis, but it must not be expected that the cystoscope will discover the name of every mysterious urinary affection typewritten on the walls of the bladder. It is particularly valuable, and often clears up the case when that symptom or sign—haematuria—often spoken of as if *it* were a disease, is present. It readily informs us whether the bleeding is primarily from the bladder or kidney; and if from the bladder, the cause can be seen, be it growth, ulcer, or foreign body.

When the blood comes from the kidney it emerges from the ureter, and looks like the smoke issuing from a volcano by night. It is well to remember that only in the early stage is villous growth of the bladder amenable to treatment; when it becomes diffuse, it is practically impossible to eradicate it thoroughly. The latter part of this statement was well emphasised by Mr Paul in a paper read before the Pathological Section of the Institution this session. It therefore becomes important that cases with other symptoms pointing to villous growth should be thoroughly investigated early, and something more etiological in diagnosis than 'haematuria' made, when blood appears in the urine. Before using the cystoscope for diagnostic purposes it is necessary, of course, to become familiar with the appearances of the healthy bladder, and to practise the delicate fingering of the instrument itself. This can, to a large extent, be acquired by experimentation with the so-called artificial bladder made for the purpose.

An anaesthetic is not necessary unless the examination is to be prolonged, or, particularly if the patient be a female, when it is intended to demonstrate the condition to a class of dressers and students: it causes no more pain than the passage of a

bougie, and the patient is not aware that a lighted instrument is inside—the heat being slight, and so quickly radiated throughout the introduced lotion as to be unnoticed.

In the two cases to be described the cause of the haematuria was discovered by the cystoscopic examination, the growths accurately localised, and the treatment suitable to each case carried out. Briefly related, they are—

1. John M'D., 38, noticed in January 1897 that his urine became bloody; there was no pain, but the condition naturally alarmed him. His medical attendant (Dr Valentine of Earles-town) prescribed an astringent, and in a week or two the bleeding, which was only occasional, ceased. For three months he was free from symptoms, but at the end of this time (April) recurrence of the bleeding took place, and a few clots appeared. His urine was often examined microscopically, but no portion of growth was seen, even although that time-honoured device of fishing for some with a large catheter had been tried. The prostate felt normal on examination per rectum, and the bladder was sounded for stone without discovering any. A growth was suspected of course, but whether of kidney, ureter, or bladder, simple or malignant, could not be answered. It might have been a case of enlarged prostate, with congestive attacks, or ulceration of mucous membrane. It was essentially a case for the cystoscope. After filling the bladder with warm boracic acid lotion, the instrument was introduced, and, after illuminating and manipulating, a beautiful picture of a small growth presented itself, growing like a piece of pink seaweed vertically in the lotion, attached to the bladder wall about half an inch to the right of the orifice of the right ureter; alongside was a tiny second growth. The larger growth was pedunculated, ending in a mass, sprouting from a short stalk half an inch in length, the colour a brilliant pink, translucent on the summit of each tiny branched sprout. The diagnosis was therefore made of small villous tumour, and operation decided upon. This examination was made in bed, and the growth seen by all the dressers. On July 10th, on the operat-

ing table, the bladder was filled with boracic acid lotion, and a large number of students had the opportunity of verifying the diagnosis by the cystoscope. Suprapubic cystotomy was then performed, the bladder opened and held open by suture retractors. A Ferguson speculum was introduced and placed over the growth, the lotion on the speculum mopped out, and the tumour inspected by direct electric light thrown down from the forehead : a forceps quickly removed the growth; slight haemorrhage occurred, which was readily controlled by pressure. The tiny second growth was then dealt with, and a portion of mucous membrane, from which the growths sprang, was cut away. After the arrest of the bleeding, two glass drain-tubes were introduced and cyanide gauze dressings applied.

The tubes were removed on the third day, and the opening gradually but slowly closed, an occasional small amount of urine escaping that way for about a month. The temperature on two occasions went to over 100°, otherwise his recovery was uneventful, and he was discharged at the end of six weeks. Microscopically, the growth is a well-marked papilloma.

He has remained free from any sign of bladder trouble since.

The second case, Ellen H., 42, single, was sent by Dr R. T. Hughes, Birkenhead, on Sept. 14, 1897, to the Infirmary. Twelve months previously she noticed a brown sediment in the urine.

Six months later micturition became painful and frequent, and large quantities of blood appeared in the urine. She suffered from pain after emptying the bladder, and occasionally had difficulty in starting micturition. She lost flesh and became anaemic, particularly during the last fortnight, when the loss of blood was very great. No tumour could be made out by ordinary examination (short of digital exploration of the bladder), although on one occasion a small portion of whitish material came away at the using of the catheter, but microscopically only blood, fibrin, and some epithelial cells were found. On admission she was very anaemic, suffered from great frequency of, and pain on, micturition, and the urine passed contained $\frac{1}{3}$

blood: no speck of growth could be found, although careful search was made.

On Sept. 18th, under an anaesthetic, the patient was placed in the lithotomy position, the bladder washed out with boracic acid lotion until the lotion returned clear, a few ounces were left in, and the cystoscope introduced. To the left side of the orifice of the left ureter and $\frac{3}{4}$ of an inch away, was clearly seen an oval depressed area $\frac{1}{2} \times \frac{1}{4}$ inch, with a black slough in the centre—evidently an ulcer—around which a fringe of sessile papillomatous nodules was arranged, brightly pink and non-ulcerated. This was clearly seen by all the dressers and students present.

The urethra was now dilated, and the smallest Ferguson speculum introduced, and placed on the growth, allowing verification of the cystoscopic picture by direct illumination from a forehead light. To the finger there was a suspicious induration, suggestive of malignancy; nevertheless it was thought advisable to clip away the papillomatous fringes, which were velvety and soft. This was done with a curved scissors, guided by the index finger of the left hand, after removal of the speculum, its small size not allowing of the necessary manipulation within it. After washing the bladder out with hot water to clear it of the debris and blood, re-examination by direct light down the speculum showed the edge nicely levelled down. The patient was sent back to bed, wearing a pad to catch the urine. Next morning she complained of pain in the lower part of the abdomen: the pad was dry. A catheter was passed, when 22 oz. of blood-stained urine was drawn off. It was necessary on one subsequent occasion to use the catheter; other times she micturated naturally.

This demonstrates how the female urethra can recover from forcible dilatation (the same happened in another and more recent case of mine).

She was discharged on the 19th day and went to a convalescent home.

When seen 2 months later, she had improved very much in health, put on weight, had a good complexion, without any sign of anaemia. She has not seen any blood in the urine, but she passes urine a little too frequently.

Microscopically, the growth removed may only be simple, but has a suspicious suggestion of alveolation, like a malignant growth, and this imparts a doubtful element into the prognosis notwithstanding the fact that she has so much improved in health in 2 months.

Dr KENNAN entirely agreed with Mr Thelwall Thomas in the opinion that expertness was necessary for the efficient use of the cystoscope. As an instance of damage done by its use, he referred to a bladder he saw in the Pathological Institute in Vienna, in which the mucous membrane of the trigone had been superficially charred by the cystoscope. He believed that in some cases of very vascular vesical tumours, haemorrhage was so easily excited that a clear view was scarcely to be obtained through the cystoscope.

Mr LARKIN congratulated Mr Thomas on his cases. He had long considered the cystoscope quite an essential instrument in examining the bladder, and frequently of great value in clearing up the diagnosis in cases of renal or pelvic suppuration, haemorrhage, etc.

Mr DAMER HARRISSON also spoke.

The Surgical Treatment of Traumatic Insanity; with a Contribution of Three Successful Operations. By DAMER HARRISSON, F.R.C.S. Edin., Hon. Surgeon the Liverpool Northern Hospital.

SINCE my first case of operation for traumatic insanity in October 1888 I have taken an increasing interest in the after-results of head injury, and have come to the conclusion that mental impairment much more frequently follows head injuries than is generally admitted.

Within a comparatively recent experience I have met with four such cases following fractures of the base, one following bullet wound of the brain, and three cases of decided insanity following fracture or blows upon the vault.

Professor M'Ewan in 1881 noted the frequency of serious mental defects exhibited by patients after apparently complete recoveries, and gives a warning against relying too much on the statistics of recovery in head cases, where the surgeon's observation ends on their exit from the hospital. He quotes a series of four cases which he showed at the Clinical and Pathological Society of Glasgow, as excellent examples of results accruing from non-interference : two were compound depressed fractures of the vault, one a fractured base, the fourth a fracture of the base with a depressed fracture of the parietal bone : all these patients, within periods varying from eight months to a year and a half, showed signs of mental impairment. This, and a large mass of evidence, goes to show that early operative interference, if thoroughly carried out, would largely lessen that large number of cases which afterwards suffer from mental impairment, and that small number which become insane.

This is fairly well shown by an analysis of all recorded cases in which operations have been performed for traumatic insanity.

For statistics and analysis of all recorded cases from 1878 to 1890 I am entirely indebted to Dr Herbert A. Powell's very valuable monograph upon "The Surgical Aspect of Traumatic Insanity." To his statistics and analysis of 67 cases I have only been able to add 10 more cases (including the 3 cases of my own), making a total of 77 cases. Of these only 7 had been operated upon at the time of the accident, and this in spite of the fact that 48 of these cases showed depression of the skull which could be felt. The number of cases of insanity due to head injury appears to be about 2 per cent. of all cases, and it is only a limited proportion of these which are open to relief by operative measures.

It is essential that some local indication should exist in a spot readily reached to justify operative interference. The

conditions were as follows in the 77 cases collected up to date :—(1) Depression in skull to be felt, with or without cicatrix, 48 ; (2) Cicatrix without depression, 13 ; (3) Evidence of old contusion, 3 ; (4) History alone an indication, 1 ; (5) Merely a tender spot, 3 ; (6) Indication not mentioned, 6 ; (7) Numerous trephine openings, without any localising lesion, 1. The actual lesions found at the operation were as follows :—Of the 48 cases of depressed fracture, besides the depressed bone, there were found 13 cases of osteophytes or splinters from the inner surface of the bone, in 9 cases thickened bone, in 3 cases cysts in the dura mater, in 1 case thickening of bone with subdural and subcortical cysts, in 1 case diseased bone, in 1 case a bullet lodged on dura mater. Of the 20 cases where there were only cicatrices or tender or sensitive spots, in 2 cases splinters or osteophytes were found, in 6 cases thickened bone, in 1 case a cyst with serous contents, in 1 case (my own) adhesions between the brain and dura, while in 8 cases nothing abnormal was discovered, and of these 8 cases 6 made good recoveries. Of all the cases collectively, the dura was stated to be adherent in 14, and the pericranium in 2. In 13 cases no particulars are given.

The Results of the Operation.—Of the 77 reported cases, 5 deaths occurred. Of the 57 cases reported in the last seventeen years, only 2 died. Of mental recoveries, 51 are reported ; of great improvement, 12 cases ; of slight improvement, 5 cases ; no improvement, 4 cases. Of these 4, 2 showed temporary improvement before relapsing, and in 1 there had been no local indication for operation.

From actual lesions found, it will be observed that only in 4 cases was the dura mater opened (including my own 2 cases), leaving the vast majority of these operations as operations attended by little or no danger, the lesion resolving itself into an irritation of the dura, or pericranium, the locality of the lesion sometimes being in the frontal, occipital, temporal, and fronto-parietal regions. In the 3 cases which I report, the lesion was in the frontal, fronto-parietal, and occipital regions.

CASE I.—F. W., æt. 50, received a severe blow from the

revolving handle of a windlass upon the right frontal region, causing a wound down to the bone and fissure of the skull. Blood was oozing from the fissure. There was weakness in the grasp of the hand. The wound suppurred, and there was a small exfoliation of bone from the outer table. From the time of injury in 1886 to October 1888 the history was as follows:—First, giddiness upon lying down or standing up, or any sudden movement of his head. These symptoms became worse, and on three or four occasions he lost consciousness for a moment. During these attacks he would frequently fall to the ground (no convulsive fits). During the second year, 1888, after the injury, he became very restless, had great fits of depression, and noticed that after the attacks of giddiness he was very irritable and bad-tempered. During this time he became troubled with strange delusions, thought people were following, saw grotesque faces looking at him through the windows at night, and would go out to drive them away. His eyesight since the accident was not so good. During September 1888 he had two attacks of homicidal impulse, and became very melancholic, with attacks of increased irritability. On October 1st, 1888, Dr Craigmire sent the case to the Liverpool Northern Hospital. Upon examination, I found a slightly depressed cicatrix, 1 inch in length, in the right frontal area, antero-posterior in direction, and $2\frac{1}{2}$ inches perpendicularly above the external angular process, corresponding to second frontal convolution. I determined upon an exploratory operation over the site of the frontal cicatrix, and proceeded to do this on October 2nd, 1888. The head was shaved and washed with soap, ether, and carbolic lotion, and a carbolic dressing kept applied to the scalp for twenty-four hours. A semicircular flap was reflected downwards, and an opening in the skull was made with an inch trephine at both ends of the depression in the bone, cutting away the intervening bridge of bone with a chisel. The bone was found to be nearly an inch in thickness. The dura mater bulged into the opening, but there was no brain pulsation to be observed.

Upon opening the dura mater a subdural cyst was opened, from which escaped about three teaspoonfuls of serum. The brain bulged into the opening, and still showed no pulsation. A fine trocar and cannula was then pushed into the brain, in a direction vertical to the cortex, and about $\frac{3}{4}$ of an inch deep a cavity was opened from which about half an ounce of serum was removed. The pulsation of the brain having become normal, the dura mater was closed with a continuous catgut suture. The inner table of the bone removed was chiselled from the outer table and replaced. The bone removed being so enormously thick, I thought it advisable not to replace the whole of the fragments. The wound healed by first intention, without any rise of temperature, except on the night of the operation, when it only reached 99·4°.

The opening made in the skull was 3 inches long by 1 inch broad. The posterior margin of the opening was $1\frac{3}{4}$ inches in front of the fissure of Rolando. The centre of the bone depression would be $3\frac{1}{2}$ inches in front of the fissure of Rolando, and this corresponded with the lesion, which occupied a position in the second frontal convolution. The patient left the hospital on the 16th day after the operation, with eyesight much improved, power restored to the left hand, and entire freedom from all mental symptoms. I have been able to keep this case under observation from year to year since October 1888, and have seen him quite recently, more than nine years after the operation, and am glad to say that he remains perfectly well.

CASE II.—The second case I have to report is that of a young man 26 years of age, whom I first saw in November 1896 in consultation with Dr Blair of Wigan and Dr Street of Haydock Lodge Asylum. I was then told the history of a severe blow which he had received on the left frontal region four years previously, which had rendered him unconscious for several days, and kept him in bed for several weeks. From the time of this accident until the beginning of this year he had been subject to occasional attacks of severe headache, which became increasingly frequent. These attacks would last

for a day, and were accompanied by delirium (and talking nonsense), and followed by complete loss of memory for all the events of the days when these attacks occurred. In the spring of this year he gradually became insane. Among other symptoms he became very suspicious of all his friends, would occasionally run out into the street and create a considerable disturbance. On one occasion ran seven miles, arriving home in a very exhausted condition, thinking he was being pursued by imaginary enemies. Sometimes he would keep his wife up all night and into the next day, making her sing, while he lay in bed, etc., etc. He at last became so troublesome at home that the question of removing him to an asylum had to be considered, and Dr Street was asked to see the case in consultation with Dr Blair. I saw the case a few days afterwards.

Upon examination, the only objective symptoms I could observe were as follows:—There was distinct weakness in the grasp of the right hand. A small scar upon the left frontal region, well in front of the motor area. Slight percussion with one finger upon the scar, but particularly a little to the median line adjoining the scar, gave rise to pain, and evidently a startling sensation in the brain. This appeared to indicate some lesion involving the dura mater, and therefore a cortical lesion, and this was further suggested by the weakness in the grasp of the right hand. The patient had become steadily worse for some time, both mentally and physically, and when I first saw him, looked very emaciated and ill. I advised an exploratory operation in the left frontal region, which should take the area of tenderness for its centre.

The case was admitted into the Northern Hospital on the 17th of September, and I operated upon him the next day. A piece of bone was removed with the chisel (in one piece), 2 inches in its antero-posterior and $1\frac{3}{4}$ inches in its vertical diameter. The posterior margin of the opening was $\frac{3}{4}$ inch in front of the fissure of Rolando, the upper margin 2 inches from median line, the lower margin of opening $2\frac{1}{4}$ inches perpendicularly above the external angular process. The pulsation of the brain

could hardly be seen through the dura mater. Upon opening the dura the pulsation was still hardly to be seen. There were no adhesions to be found until the dural elevator was passed backwards beneath the margin of the bony opening and also below. Adhesions which were extensive in character were then separated over the base of the second frontal convolution, and over the base and anterior to the base of the third frontal convolution, the dura sutured, and the flap of scalp replaced; but it was considered wiser not to put back the bone, considering the nature of the lesion. The wound healed by first intention. On the day after the operation he was found to be suffering from slight motor aphasia, and paralysis of the right side of his face. All signs of his previous insanity had, however, quite disappeared. On the fourth day he had a slight fit without loss of consciousness, limited to the lower jaw. For the next 13 days had a large number of Jacksonian attacks, once or twice losing consciousness. During this time there was considerable bulging from a collection of serum beneath the dura, which I made no effort to drain, as I considered this might be left to be reabsorbed, and in the meantime might prevent further adhesions forming between the brain and the dura mater.

As this collection of serum became less, the paralysis of the right side of the face and right hand became less, together with a rapid improvement in the aphasia.

For a considerable time after being convalescent, he had complete hemi-anæsthesia of the right side of the body, with a loss of the muscular sense in the right arm. For instance, with his eyes closed, when 5 lbs. were placed in one hand and one penny in the left he thought the weights were equal. The anæsthesia first disappeared from the foot, and in the course of two or three hours disappeared from the rest of the right side excepting the arm. This remained anæsthetic when he left the hospital on the 24th of October. He keeps forgetting where he put his hand last, and has to look for it. There was also some improvement in the muscular sense. The mental condition since the operation has been perfectly normal.

The patient is quite above the average intellectually, and it is interesting to talk to him about his previous mental condition. He remembers nothing of his life for the four months preceding the day after the operation, with the exception of one event —the breaking of a bicycle.

The question arises as to the way in which the adhesions gave rise to the mental symptoms: was it from the dragging action exerted upon the cortex only, or was the action also causing a disturbance of the circulation to certain centres?

An interesting point in this case is the fact that the point of extreme tenderness on the scalp was at some distance from the lesion, and shows the importance of making a large opening in the bone. If this practice had not been followed in this case, the lesion would not have been discovered. This patient remains perfectly well one year and eight months after the operation.

He still has loss of muscular sense, and some anaesthesia in the right arm and hand, but can do good work as a cabinetmaker.

My Third and last Case of operation for traumatic insanity was one that I saw in consultation with Dr Wiglesworth, of the Rainhill County Asylum, in November 1897.

The patient was a male attendant in the asylum, who four and a half months previously, while in special attendance upon a dangerously suicidal case, was struck by the patient a very heavy blow on the back of the head, a little to the left of the centre, and at a point corresponding to the second occipital convolution. The resulting scalp wound extended to the bone, but there was no fracture of the skull observable.

The man was kept in bed for ten days to a fortnight; and when sufficiently recovered, was sent home for a month's holiday. During the month at home the patient's relations noticed a change of manner, the man becoming strangely quiet, and hardly speaking to anyone. He eventually returned to his duties at Rainhill Asylum, where the change in manner was noticed by his fellow-attendants. About two months later he began to suffer from hallucinations with regard to the man who had struck him: he frequently thought that he saw him in the

room, and threw things at the apparition. The site of the cicatrix corresponding with the second occipital convolution is interesting in relation to the hallucinations as to vision. Two or three days later, and nearly four months after the injury was inflicted, an acute attack of suicidal mania suddenly came on, and for a week to ten days it required the combined efforts of several attendants to restrain him. I saw the case with Dr Wiglesworth about the eighteenth day from the beginning of this outbreak. The patient was then quite quiet and rational, and explained to me that although at that moment he was only suffering from a feeling of depression, he had during the previous night been seized by an almost irresistible impulse to commit suicide by smashing his head against the wall. Dr Wiglesworth at this time considered it necessary to have the patient watched night and day. It was decided that an exploratory operation should be performed, the scar in the occipital region being taken as the guide. This was done two days later. A semicircular flap was made to reflect downwards in the usual manner, and a piece of bone was removed $1\frac{1}{2}$ inches by 2 inches in diameter. The only abnormal condition found was adhesion between the cicatrix and the bone, it being questionable as to whether the bone removed was thickened to some slight extent or not. The bone was not replaced. The wound healed up by first intention, with a normal temperature throughout, the patient mentally recovered from the date of the operation. As Dr Wiglesworth considered that this man was not fitted to continue his occupation as an asylum attendant, the governing committee granted him some compensation, and he returned to his home. He remained quite well until last heard of four and a half months after the operation, and there is good reason to believe that no relapse has taken place since, from the fact that no relapse has been reported to Rainhill Asylum.

Mr RUSHTON PARKER remarked that the effects of injury to the head were evidently various, as for instance, as he had himself seen, in a strong, steady working-man, who, after

contusion of brain, became negligent, passionate, and permanently untrustworthy; and in an old gentleman of 70, who became degenerate and died; both without seen or local symptoms susceptible of relief by operation. There were evidently also the cases mentioned by some of the speakers, where symptoms of insanity, directly due to head injury, passed away completely without operative treatment. But the cases mentioned by Mr Damer Harrison were clearly urgent, and going from bad to worse previous to operation, which, in each case, had been followed by conspicuous relief and permanent recovery. What appeared most striking in these cases was not merely the necessity for, and the good result of, trephining, but also the remarkably slight anatomical changes found at the operation in some of them. This was by no means the only class of case in which operations, for exploratory or other experimental reasons, had been of undoubtedly benefit, without affording a clear explanation afterwards why the benefit resulted. Such cases must continue to occur from time to time, and were most instructive in the observation and treatment of injuries to the head.

Dr NATHAN RAW thought a very few cases of real insanity were due to traumatic causes,—in fact, only about one-third per cent. on the total admissions to asylums.

Excluding depressed fractures and adherent cicatrices, causing local and motor symptoms, operative interference could not be of much benefit.

The temporary insanity due to concussion of the brain, causing molecular disturbance, as a rule passed off without any interference.

Mr C. G. LEE referred to a case shown before the Society some three or four years ago by Dr Rawdon, in which a young lady had fallen from a bedroom window, and in her descent her head came in contact with spiked heads of the area railings, one of which penetrated the skull, lacerated the superior longitudinal sinus, and damaged the left occipital lobe, near the cuneus.

The patient made a good recovery under Dr Rawdon's care. She never had any mental disturbances, nor any hallucinations of sight.

At Dr Rawdon's request, Mr Lee had examined the eyes as soon as the patient was convalescent from the immediate effects of the injuries; and although the appearances of the optic nerve and retina were perfectly normal, there was well-marked right-sided hemianopsia. This symptom persisted to the present time, but mental faculties were unimpaired.

Contrasting this case with the last one operated upon by Mr Damer Harrisson, Mr Lee was inclined to think that the symptoms in Mr Harrisson's case might be functional in their character.

Mr DAMER HARRISSON, in replying, said that he still adhered to the statement in the earlier part of his paper, that the number of cases of insanity due to head injury appears to be 2 per cent. of all cases, and not $\frac{1}{3}$ per cent. as suggested by Dr Raw. He thought that there were a considerable number of cases in the asylums of this country that might be cured or benefited by surgical treatment, and he believed that the value of such treatment would be increasingly recognised.

EIGHTH ORDINARY MEETING, HELD 20TH JANUARY 1898.

Cases illustrating the value of the Cystoscope in Diagnosis.

MR W. T. CLEGG read notes of four cases—two cases of bladder tumour and two cases of latent renal disease—in which the cystoscope at once threw light upon the source of the symptoms.

Case of Congenital Syphilis.

DR T. R. BRADSHAW showed a well-marked case of congenital syphilis in a boy aged 11. There was a history of hemiplegia, first on the right and then on the left side; there was late rigidity of left arm, with dislocation forwards of the radius. The face strongly resembled that of a cretin; but although

sight and hearing were affected, there was no impairment of intelligence.

Two Rare Urinary Deposits.

DR T. R. BRADSHAW showed hanging drop preparations of (a) cystin and blood, and (b) a deposit from alkaline urine, consisting of triple phosphate, and spheres and dumbbells, which he believed were calcium carbonate. The deposit was dissolved by acetic acid, with effervescence. The urine in (a) did not give the guaiacum reaction, although blood corpuscles were present in great numbers. Dr Bradshaw did not connect the failure of the guaiacum test with the presence of cystin : he merely pointed out the fact to show that the absence of the reaction was not always conclusive of the absence of blood. He thought that it depended on the fact that occasionally the urine was of such density and composition as to be indifferent towards the corpuscles of the blood, so that the haemoglobin was not dissolved out.

DR BUCHANAN said that he was of opinion that the urinary deposits exhibited by Dr Bradshaw under the heading of calcium carbonate were urate of ammonia, which is found in conditions of urine such as he described. On the other hand, they might be a rare form of uric acid, their shape being dependent upon the nature of the fluid in which they were deposited. Such a form of uric acid may be artificially stained, in comparison to dumbbell oxalates and calcium carbonate. Calcium carbonate being an exceptionally rare deposit in such definite form in human urine, and being colourless, could be distinguished from the specimens shown, the latter having a deep orange colour. Both are soluble in acetic acid, the calcium salt with evolution of gas from the crystals, urate of ammonia being decomposed and uric acid set free. The evolution of gas from the urine shown, after addition of acetic acid, he thought, was due to the presence of other carbonates.

Case of Arrested Endocarditis.

DR CATON showed a boy, J. B., aged 14, who was admitted into

the Infirmary on November 12th, suffering from acute rheumatism with endocarditis, a loud systolic bruit at the apex, and accentuation of second pulmonary sound. The cardiac complication was believed to be recent. There was also slight chorea.

The rheumatism was treated in the usual manner, and subsided within a week. For the cardiac condition, absolute rest, a light diet, potassium iodide in 15 grain doses daily, and the application of small blisters to the precordium, were prescribed.

On December 6th the murmur had become very soft, on the 19th it was scarcely audible, and a few days later it had disappeared altogether. No murmur nor pulmonary accentuation now existed.

Dr Caton remarked that he had employed the above treatment in about fifty cases of acute rheumatic endocarditis. In two-thirds of these cases the bruit had disappeared. He had observed, however, that if rheumatism again attacks the patient within a short period, the cardiac mischief is apt to recur. He urged the importance of endeavouring in every case of acute rheumatism to prevent cardiac complication; or, should it unhappily occur, recommended that the above means be used to check it in the early stage.

(*Note.*—May 19th.—The patient above referred to remained well for some months, but unhappily in April a renewed attack of acute rheumatism was followed by recurrence of cardiac symptoms, for which he is now under treatment.)

Dr CARTER thought Dr Caton had done great service by proving to us how much could be effected by patience and skill to ward off the serious effects of acute endocarditis. On the general question of blistering, he was surprised to find how greatly, and as he believed unreasonably, medical opinion had changed as to its supposed utility in acute rheumatism since the time when the late Dr Herbert Davies had seemed to demonstrate, on the same basis of fact, the good effects that followed its employment. A few years ago, on his prescribing blisters for the inflamed joints of a negro, one of the students by the bedside asked him if he

thought they were useful. He asked the student to watch the result and form his own opinion. On inquiring why he asked the question, a student's manual of clinical medicine was produced, in which, without a title of evidence, the practice of employing them was condemned.

It was said by some writers on therapeutics that if applied immediately over the heart, blisters acted as irritants, and not as counter-irritants, and thus increased the mischief they were intended to subdue. In opposition to this, we had Dr Caton's remarkably successful practice; and he (Dr Carter), when this statement was many years ago advanced, had brought before the Institution the results of blistering the shaven praecordial skin of white rabbits. Neither the pericardium nor endocardium, on the rabbits being killed, had shown the least indication of inflammation or irritation, so that he had come to the conclusion that the fear of using blisters was unreasonable; and that it had been passed from mouth to mouth and book to book without the majority of people taking the trouble to test its reasonableness for themselves.

A Case of Deformity of the Toes. By ROBERT JONES,
F.R.C.S. Ed., Hon. Surg. Royal Southern Hospital.

ON November 19th, 1895, Mr D'Arcy Power showed for me, at the Pathological Society, London, a case of macrodactylia, due to diffuse lipoma. It affected the right thumb and index finger of a girl aged eighteen months. The right hand was noticed to be enlarged at the time of her birth, and the parents sought advice when the child was ten days old. From that time the index finger and thumb rapidly increased in size, until in six months it had seriously impeded the movements of the hand. When I saw the hand it presented the appearance depicted in fig. 1. The thumb was widely abducted, the hand was deflected to the ulnar side. The skin was redder than natural, but there was no venous enlargement. The thumb and fore-

finger could be moved a little, but there was free movement in all the other fingers and in the wrist. The hand was so heavy and useless that I amputated the thumb and forefinger. The patient made a good recovery, and six months after the operation the hand, although slightly larger than the other, was quite useful. Dissection showed that the increased size of the finger and thumb was due solely to an increase in the amount of the subcutaneous fat. The muscles had become involved in the fatty overgrowth. There was no evidence of lymph-



FIG. 1.—The Hand.

angiectasis. The bone was somewhat rarified; it cut readily, and contained soft yellow marrow. Microscopic sections were made by Mr D'Arcy Power, Mr Thelwall Thomas, and Dr Chalmers, and they found that the epithelium was unaltered: that the superficial layers of the true skin were firm, and somewhat denser than usual: that the deep layers were replaced by an enormous overgrowth of true adipose tissue, held together by a strong framework of fibrous tissue carrying

the blood-vessels. The adipose tissue was in every respect normal, but had grown to such an extent that it involved the subjacent voluntary muscles, and had split them up into their component bundles, whilst in a few places it had invaded the inter-fibrillar connective tissue. The individual muscle fibres were striated, so that the change was rather one of fatty infiltration than of fatty degeneration. The blood-vessels were not enlarged, and the lymphatics were unchanged.

I have described my former case at length, because Dr Cornwall of Birkenhead recently sent me a case which seems to correspond absolutely with it in all but the fact that the disease has affected the foot. The patient, a boy aged thirteen, was born with an enlargement of the first and second toes. When I examined him, I found that the length of his foot was 12 inches. The circumference of the instep was $11\frac{1}{2}$ inches, the length of the right big toe $4\frac{1}{4}$ inches, circumference $6\frac{3}{4}$ inches, the second toe 3 inches long, with a circumference of 5 inches. There was a little movement in the toes, and latterly a good deal of pain when he attempted to walk. There was very little difference in the size of the limbs above the ankle. That my first case was one of macrodactyly there can be but little doubt. Like the present it occurred sporadically in the family. It was unilateral. It did not affect all the digits. Both my cases differed from the very few recorded cases in the fact that the deformities were congenital. The previous cases have been described as cases of lymph-angioma, or the results of lymph-angiectasis, and it will be interesting to note later whether in this case any lymphatic trouble will be noted, or whether, as in the one before, it will prove to be due to a diffuse lipomatous enlargement.

The teaching has always been that lipomata are very rare in the extremities; although this is so in the case of adults, there are several instances in which fatty tumours have appeared as congenital defects in the limbs of children. I propose at an early date removing the hypertrophied portions of the foot to the extent most likely to restore its utility.

When this is done, the microscopic characters will be exhibited at the Pathological Section.

The X-ray photograph shows that the bones of the first and second toes are very much hypertrophied, and that their enlargement is in ratio with the thickening of the soft structures covering them. There is a certain degree of hallux valgus, and all the toes are pushed outwards.

Fig. 2 shows the deformity described. Amputation of

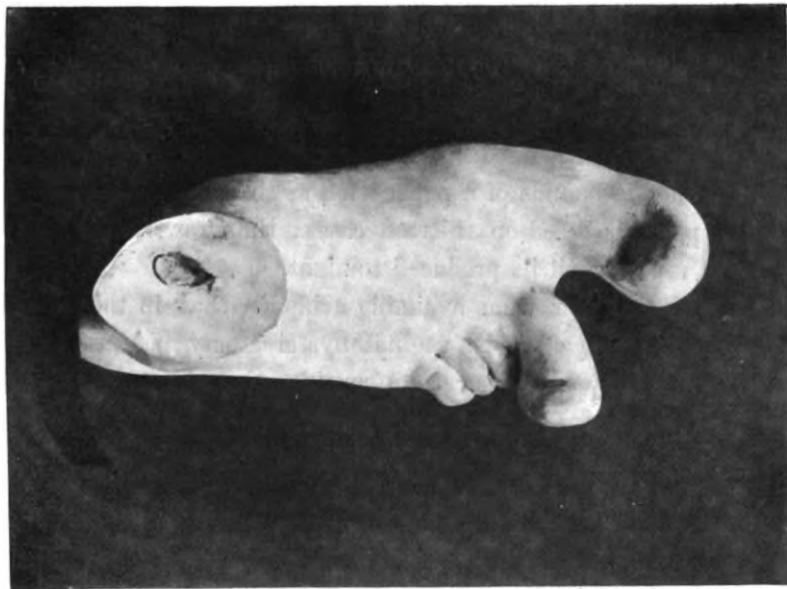


FIG. 2.—The Foot

the first and second toes was done at the Royal Southern Hospital. Pathological examination of the parts removed showed that the disease was one of macrodactylyia, and the microscopical appearances were identical with those already described in connection with the enlargement of the hand.

MR ARTHUR WILSON showed a cast of marked hypertrophy of the second and third toes in an infant.

Vaginal hysterectomy in the treatment of uterine fibroids; with a table of thirteen operations. By H. BRIGGS, M.B., F.R.C.S. (Eng.), Surgeon to the Hospital for Women, and Consulting Medical Officer to the Lying-in Hospital.¹

COMPARATIVELY few cases of uterine fibroids have been treated by vaginal hysterectomy in this country. Scattered in the journals and in the reports of societies, about a score of cases, associated with the names of Heywood-Smith, Donald, Smyly, Murphy, Helme, Armand Routh, and others, represent an insignificant total when compared with the 319 (Péan's 200, Doyen's 53, and Segond's 66) from three continental operators alone.

This is a remarkable disparity in statistics, which is not readily enough explained for its consideration to come within the reasonable bounds of a paper such as this.

My paper is based on thirteen cases: the growths and the clinical reports will be produced to-night.

It would appear from available evidence that, in the treatment of uterine fibroids, vaginal hysterectomy possesses advantages worthy of the surgeon's consideration.

The position of vaginal hysterectomy in the treatment of uterine fibroids being so vastly different at home and abroad, it occurred to me that an experience of thirteen cases might be recorded, and that a study of Case I., alone, would rarely fail to convert an opponent to the operation.

CASE I.—M. S., aged 44. The path of operation was plainly indicated by the morbid anatomical conditions present in the patient. In her, two inches of the large cervix protruded through the vulval orifice. The corpus uteri was pushed downwards and to the right by an intra-ligamentous myoma blocking the pelvis above and to the left of the uterus. The physical signs were well defined, and with them were associated considerable suffering and an almost total disablement from her duties as a small shopkeeper. Latterly; the usual menstrual excess had diminished, the pelvic and abdominal pains

¹ Read at the Medical Institution in January 1898.

and the bladder symptoms had got worse. Micturition always difficult; frequent retention. She had been married only one year.

As a means of relief, amputation of the cervix had been suggested, but it would have been to her of little service. Vaginal hysterectomy was pointed out by the physical conditions, as I have stated. It was performed on July 16th, 1896; recovery ensued. She now enjoys comfort in the pelvis, in addition to good general health.

The fibroid was not a small one; it and the uterus weighed 1 lb. 14 $\frac{1}{2}$ ounces. A fibroid, the size of a foetal head at full-time, situate deeply in the pelvis, and burrowing in the mesometrium, has not hitherto proved a favourable object for either abdominal hysterectomy or abdominal enucleation.

Enucleation by the vaginal route would have been difficult, if not impracticable, with the uterus *in situ*; and why mince matters about hysterectomy in a patient aged 44? The ovaries and tubes were healthy, and were not disturbed.

But to complete the comparisons: let us suppose an earlier period in menstrual life, and let us picture to ourselves the sequel to the appendage operation. I happen to have the notes of such a case.

The removal of the appendages on August 17th, 1893, from a single woman, aged 29, was followed by the cessation of menstruation and of attacks of urinary retention, also (for she was an epileptic) by the temporary abatement of the seizures to which she had been subject since puberty.

What happened to the fibroids filling the pelvis, and the symptom of which she chiefly complained? The fibroids ceased growing; they decreased in size; they were still in the pelvis. The bearing-down pain continued as before. She rested; she came back to hospital. Various supports for the uterus were tried; the most comfortable, a watch-spring pessary, was often extruded by the pressure of the fibroids, until, later, by a second operation, the perinæum had been prolonged.

In the two cases, the results, by contrast, testify strikingly in favour of vaginal hysterectomy.

The only slight improvement in Case I. could have been vaginal or abdominal enucleation, if practicable or equally safe. This has not yet been shown.

CASE II.—In January 1895, an acute attack of peritonitis led Dr A. MacLennan of Runcorn to examine A. J., aged 27, in whom he found a fibroid. She remained in bed for three weeks; the peritonitis subsided into a chronic form. Menstruation became painful, the bladder irritable, the legs oedematous. She was not anaemic. The menstrual losses, formerly seven days every four weeks, latterly one-and-a-half days every three weeks, were not excessive. She remained an invalid, and on August 6th, 1895, was admitted into the Hospital for Women. Total rest until the 11th September produced no change in the symptoms or physical signs beyond the disappearance of the oedema from the legs.

There was a fibroid in the anterior wall of the body of the uterus, and a fixed swelling mainly in the right lateral fornix.

On September 11th, vaginal hysterectomy was completed with difficulty, in consequence of the right-sided fixation and the peritoneal matting in the pouch of Douglas. When the uterus had been removed, uncertainty was experienced in distinguishing ovary from rectum; lying side by side, both were velvety and congested on their peritoneal surfaces. The ovary, enlarged and apoplectic, was extirpated along with its tube. The left ovary and tube, normal, were left *in situ*. Convalescence was uncomplicated, and the recent report, in January 1898, is quite satisfactory.

CASE III.—M. M^cG., aged 48, was unable to work because of a bearing-down, due to a hard pelvic fibroid, tender, and intolerant of contact with a mechanical pessary. The menopause had become established at 44 years of age. The subserous fibroid involved the right wall of the uterus posteriorly.

Vaginal hysterectomy, November 20th, 1895, was an easy procedure; it occupied fifteen minutes.

CASE IV.—E. W., aged 43, complained of inability to walk more than a very short distance; she suffered from pain in the

abdomen and back, and from retention of urine. The fibroid uterus occupied the pelvis.

Vaginal hysterectomy was effected, after repeated sections of the fibroid by a probe-pointed bistoury, on February 4th, 1896.

CASE V. was an instance where pain, pressure symptoms, and the consequences of pressure on the urinary bladder continued after the menopause. M. B., aged 53, menopause at 50, complained of "very severe pain" in the back, and "something hurt her, as if on the bladder."

She had frequently, during the day, to lie down for the relief of pain. The doctors, who had prescribed for her, had hoped that the symptoms would improve with the change of life.

The fibroid uterus was equal in size to, but wider and shorter than, the three-months' pregnant uterus.

Vaginal hysterectomy was not an easy operation : the fibroid was partly calcified, and was reduced in size with difficulty.

CASE VI.—M. W., aged 40, had been under medical treatment for many years, because of pain in the back and abdomen.

She said "she could scarcely get about," and the pain was almost constant. The pessary, introduced for support, did not relieve the pain, and it increased the urinary troubles. The uterine fibroid filled the pelvis.

Vaginal hysterectomy, on July 6th, 1896, was rendered a troublesome operation by the mechanical impaction of the myoma in the pelvis : many sections had to be made through the growth.

CASE VII. was the first of the series in which haemorrhage was the main symptom.

Metrorrhagia, pain and pressure symptoms induced her doctor to send her to hospital for treatment. She was pallid.

The fibroid was of considerable size, and during vaginal hysterectomy its bulk was reduced in size by sections through its substance.

CASE VIII. was sent into the Hospital for Women by Dr Hugh Williams. A large fibroid growth was impacted in the pelvic cavity. Retention, or catheter, cystitis complicated the case.

The temperature ran up at night to 102°, 103°, and, once, to 104°. She was at rest in bed, and under observation, for two-and-a-half months; the bladder was washed out twice daily; the pus in the urine almost disappeared, but the fever recurred.

A portion of the temperature chart, before and after operation, shows the extent of the fever before, and the complete arrest of fever after, operation (see chart, p. 265).

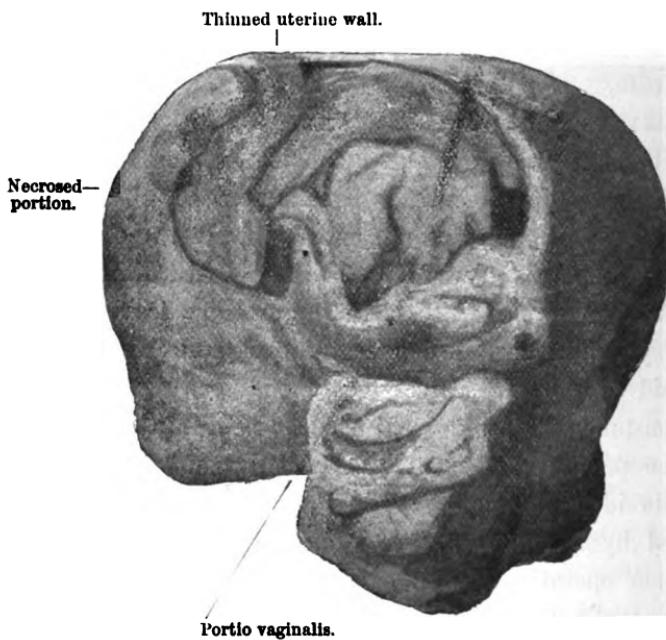


FIG. 1.—Impacted, necrotic, pelvic myoma.

CASE VIII.—M. W., aged 41. Weight—solid, 1 lb. ; fluid, 1 pint.

All the symptoms were relieved; the temperature never rose above the normal whilst she was in hospital for five weeks after the operation.

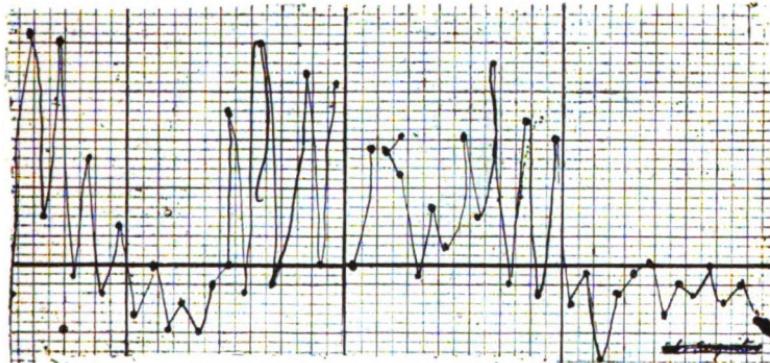
Vaginal hysterectomy was easier than usual with so large a growth because of the liquefactive necrosis which had rendered the fibroid partly 'cystic.' The necrotic changes, then found, accounted for the fever before operation.

CASE IX.—Mrs A.'s fibroids were increasing in size, as

proved by the independent observations of Dr H. W. Knowles and myself. Mrs A. was 45 years of age, and suffered from pressure symptoms and from pain when walking.

Her husband was in delicate health, and it was her wish to travel with him; a business journey and residence abroad, if sanctioned by us, were in contemplation.

To the patient vaginal hysterectomy offered a reasonably safe mode of deliverance from her burden, provided the fibroids were not allowed to grow much larger in size. This was explained to the husband and the patient.



The operation was performed on July 27th, 1897. There were two considerable masses of growth,—(1) a subserous fibroid, attached to the fundus by a pedicle; and (2) the uterus, with two intra-mural fibroids. The former followed the latter through the pelvic canal; each taxed the canal to its utmost accommodation. At the operation a large hydro-salpinx on the right side was also removed.

CASE X., an interstitial myoma, characterised by haemorrhage and pain.

J. S., aged 37, was pale in consequence of the excessive blood-loss.

September 29th, 1897, vaginal hysterectomy.

CASE XI. may be looked upon as a severe test for the operation. The patient was profoundly anaemic. The fibroid

was of large size, requiring considerable sectionising before its delivery per-vaginam could be accomplished. Recovery was easy.

E. B., single, aged 33, was very pallid and considerably emaciated.

She had suffered seriously, for over twelve months, from the effects of haemorrhage,—palpitation, and shortness of breath.

Hydro-salpinx, from right side.

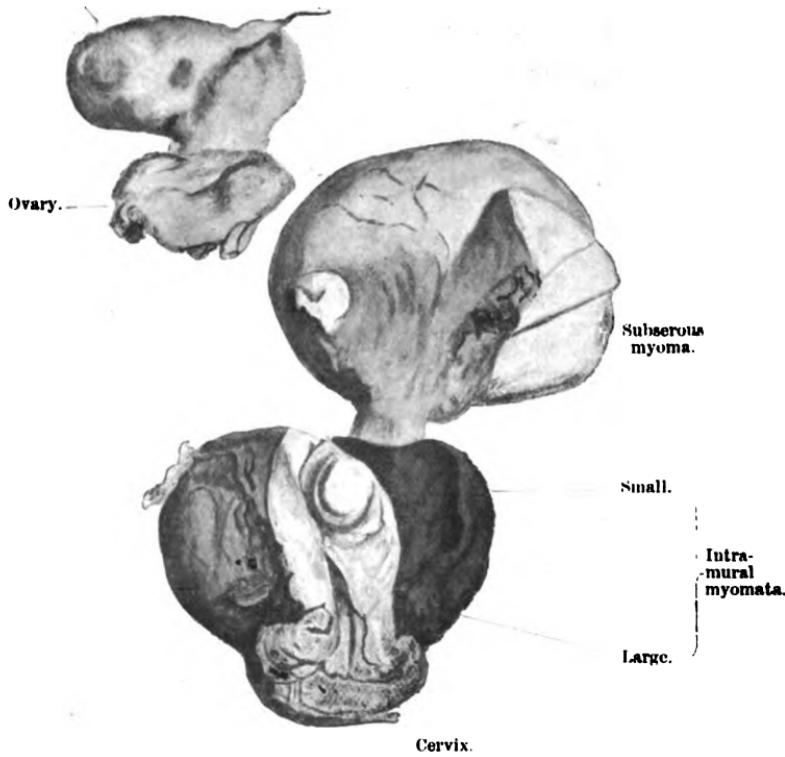


FIG. 2.—Three fibroids and a hydro-salpinx.

CASE IX.—Mrs A., aged 45. Weight of fibroids, 2 lbs. $\frac{1}{2}$ oz.

Four months before admission the bleeding had continued for seven weeks without intermission. The fibroid was growing, and she was steadily losing flesh. She complained of pain in the back and difficulty in micturition.

The operation of vaginal hysterectomy, October 13th, 1897, was protracted by the process of reducing the bulk of the soft

myoma, which involved the whole of the body of the uterus. Notwithstanding the previously reduced health of the patient, the operation was well borne, and recovery occurred without complication.

Note.—She was present one evening in the library of the Medical Institution, in order that members interested might

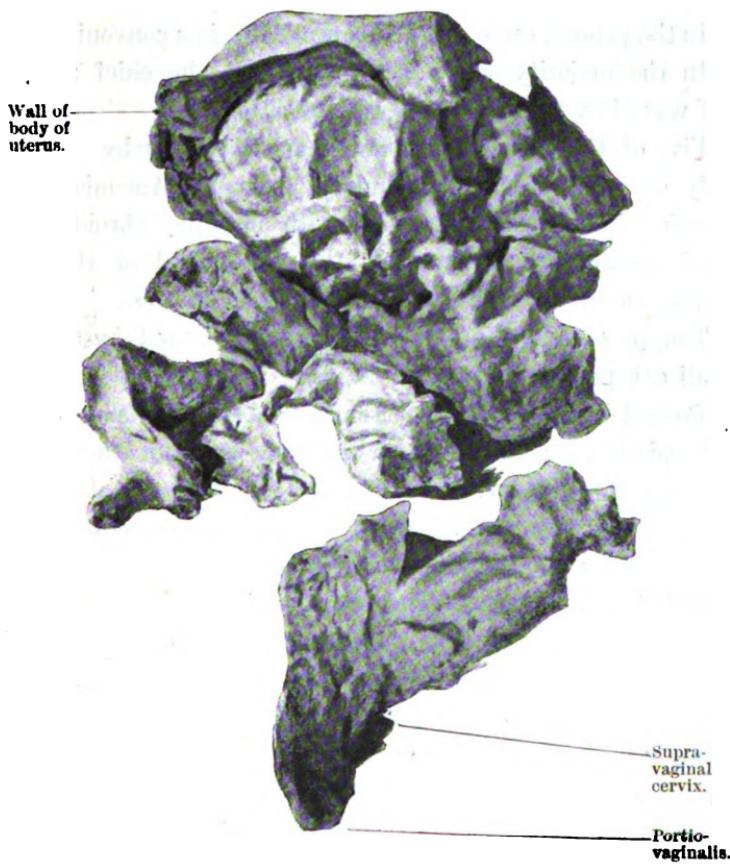


FIG. 3.—Morcellement. Myoma sectionised in all directions.

CASE XI.—E. B., aged 38. Weight 2 lbs. $\frac{1}{4}$ oz.

observe the degree of anaemia then remaining, five weeks after the source of the blood-loss had been withdrawn.

CASE XII.—D. W., aged 34, complained of the increasing haemorrhage, pain, and bladder irritation associated with a fibroid in the posterior wall of the uterus. She was anaemic. November 20th, 1897, vaginal hysterectomy.

CASE XIII.—C. B., a widow, aged 42, a "warper" in a Lancashire cotton-mill, physically a big, powerful woman, complained of pain, bearing-down, and throbbing in the pelvis. She was unable to work in consequence of her sufferings, upon which rest for a long period had had no influence. Vaginal hysterectomy, December 1st, 1897, has been followed by total relief.

In the printed table, details are accessible in a convenient form.

In the majority of the cases, pain was the chief symptom and was always abolished by the operation.

Five of the patients had had haemorrhage worthy of notice. Only one had become profoundly anaemic. Anaemia, of the chronic kind, usually associated with bleeding fibroids, seems to disappear very slowly after the withdrawal of the cause. In not one of the cases was a polyp found *in utero*.

The pressure symptoms were totally arrested by operation in all except one patient, M. B., Case V. The operation was performed in March 1896. In December 1896, she returned to hospital, complaining of an irritable state of the bladder. Rest, for three weeks, and a bladder douche, twice daily, were tried. There was nothing discovered in the urine or bladder to account for the irritability which had existed for over nine years before operation. The vesical irritability was attributed to the fibroid. In her, a partial disappointment remains. The act of micturition is repeated 16 times per-whole-day as against four times that frequency before operation. Her doctor writes:—"She can work hard on the farm, and has lost her old pain in the back,"—January 1898.¹ Ought this, relatively partial, persistence of bladder irritability to be considered in any way a drawback to the operation? If so, a partial disappointment in one set of symptoms in only one of the thirteen cases is not discouraging from the point of view of the relief of the patient's sufferings, reasonable safety in the operation being assured. The safety of an operation does not justify its performance. To the surgeon, the greater safety

¹ June 1898, "Irritability of bladder almost gone."

Vaginal Hysterectomy in the Treatment of Uterine Fibroids.

	Medical Attendant.	Date of Operation.	Initials of Patient.	Social State. If Married. No. of Years.	Pregnancies.	Menstrual History.	Chief Symptoms.	Description of Tumour.	Weight of Tumour and Uterus.	Recent Report.
I.	Dr. Morris, Liverpool.	July 16, 1895.	M. S.	44	M. 1 year.	" excessive.	Vesical irritability, and something prolapsed per-vaginam.	Mycoma of uterus, in broad ligament, producing prolapsus uteri.	1 lb. 14 ozs.	1896. Jan. 5. In good health.
II.	Dr A. MacLennan, Runcorn.	Sept. 11, 1895.	A. J.	27	M. 6 years.	" increased.	Acute localised peritonitis in bed 3 weeks; 1895; in bed 3 weeks; not well or free from pain since.	Mycoma of anterior wall of uterus. Apoptotic right ovary. Adhesions.	10 ozs.	Jan. 5. Ditto.
III.	Dr Cornwall, Birkenhead.	Nov. 20, 1896.	M. M.G.	48	M. 30 years.	4 ch. (4) 10 yrs. 1 ch. 17½ yrs. ago.	Menopause 4 years ago. 4½, variable, not excessive.	Mycoma of posterior wall of uterus. Pelvic pain; vesical pain; vesical symptoms. Pain; "hurts her as Party myoma.	9 ozs.	Jan. 5. Ditto.
IV.	Dr O. F. Evans, Liverpool. Dr Foster, Barrow, near Chester.	Feb. 4, 1896. Mar. 31, 1896.	E. W. M. B.	43 58	M. 21 years. 31 years.	" excessive.	Menopause 3 years ago. 4½; last 12 months excessive every 2 weeks.	Mycoma of fundus calcified.	15½ ozs. 13½ ozs.	1897. Dec. 1898. Jan. 8. Improved health; "bladder less irritable."
VI.	Dr Morris, Birkenhead.	July 6, 1896.	M. W.	40	M. 17½ years.	" excessive.	Pain very severe. Pain in back and abdomen.	Mycoma of body of uterus.	14½ ozs.	1897. Sept. In good health.
VII.	Dr T. A. Wood, Isle of Man. Dr Hugh Williams, Liverpool. Dr H. W. Knowles, St Helens. Dr Murray-Cairns, Liverpool. Dr Crewe.	Dec. 4, 1896. May 25, 1897. July 27, 1897. Sept. 29, 1897.	M. M. C. M. W. Mrs A. J. S.	39 41 45 37	M. 8 months. 23 years. 11 years. still-born.	" excessive. " 3 months' suppression.	Menorrhagia and pain. Inflammatory fever. Great pain in pelvis. Pressure symptoms; fibroids growing.	Mycoma of body of uterus, undergoing necrosis, and impacted in the pelvis. One sub-serous and two intra-mural myomata.	9½ ozs. Solid 1 lb. 1 pt. 2 lb. ½ oz. " (size of adult fist).	1898. Jan. 6. Jan. 11. Ditto.
VIII.	Dr T. A. Wood, Isle of Man.	Oct. 18, 1897.	E. B.	33	S.	" excessive.	Hæmorrhage and pain.	Ditto.	2 lbs. ½ oz.	Jan. 3. Improving, slowly; profound anaesthesia.
X.	Dr McGibbon, Liverpool. Dr Irvin Sellers, Preston.	Nov. 20, 1897. Dec. 1, 1897.	D. W. C. B.	34 42	M. 7 years. M. 23 years.	" normal.	Hæmorrhage; bladder symptoms. Severe pelvic pain.	Ditto. Ditto.	1 lb. ½ oz. 1 lb. 8 ozs.	Jan. 10. Improving, steadily, from anaesthesia. Total relief.

of vaginal over abdominal hysterectomy has been repeatedly demonstrated.

I may be allowed, in this connection, to cite my own results. In addition to the 13 cases of uterine fibroids, 43 cases of uterine cancer, in all 56 operations of vaginal hysterectomy; with two deaths, (1) at the 37th hour, and (2) on the 35th day, amongst the cancer cases.

But, to confine our attention to the operative treatment of uterine fibroids by vaginal hysterectomy, it must not be forgotten that, in the 13 cases I have narrated, the fibroids were wholly, or almost wholly, pelvic; they were, compared with the very large and complicated myomata which I have treated by abdominal hysterectomy, what may be called early, though some were complicated, growths. One tumour burrowed deeply in the pelvic cellular tissue, one was impacted and necrotic (with fever), one was associated with profound anaemia, two were calcified and reduced in size with difficulty, with two there was appendage disease.

In each case the patient's sufferings were considered severe enough to warrant an operation, and I was associated with her usual medical attendant in advising the treatment.

For abdominal hysterectomy, let us take the latest paper, one by Mr Bland Sutton, read before the Obstetrical Society of London last year, recording 28 cases of uterine fibroids, treated by abdominal hysterectomy, with two deaths. Many other surgeons have achieved equal, or even greater, success in a limited number of cases.

Mr Bland Sutton pleads for early operation, but is unfortunate in associating ovarian tumours with uterine fibroids, on parallel lines as it were, in their dangers to life if left undisturbed.

Critics seem to have exaggerated Mr Bland Sutton's plea. In support of the popular ruling against early and indiscriminate operating, there are abundant statistics, founded on post-mortem and clinical records, to show that myomata are frequently harmless and symptomless.

By post-mortem investigations, Bayle ascertained that 20 per cent. of all women over 35 years of age, and Klob found that 40 per cent. of all women over 50 years of age, had uterine fibroids, and in the majority of these the tumours were small enough to have escaped detection during life.

Dr Haultain, on the clinical side, out of 2230 gynaecological in-patients in the Edinburgh Royal Infirmary, estimated that only 8 per cent. had their symptoms referred to uterine fibromyoma.

A large proportion of uterine fibroids being harmless, the plea for an early operation, as in the case of ovarian tumours, cannot always be accepted.

The immediate and remote results of operation are not always of the best.

A patient may exchange a myoma for a ventral hernia.

Ventral hernia is more common after abdominal section than is generally known. A few months ago a medical friend told me that each of the three patients in his practice operated upon, two by Sir Spencer Wells in his best days, and one by myself, for uterine or ovarian tumours, had now a ventral hernia.

The security of the ventral cicatrix resulting after layers of sutures has yet to be proved.

The vaginal operation avoids the chance of a ventral hernia and enables the operator to deal with fibroids, of which I have given examples, difficult or dangerous of access by the abdominal route because of their low situation in the pelvis and low uterine connections.

In the table, the weight of the tumours and uterus is stated in all except one (Case X).—a fibroid the size of an adult fist.

Size, shape, situation, weight, measurements, mobility, attachments, and relations of the growths to neighbouring tissues can only be approximately ascertained by the most complete and careful bimanual examination.

Accessibility is most important. With accessibility, the reduction in size and the dissection of the growth and uterus from attachments can be safely procured.

The reduction in the size involves traumatising manipulations, but these are almost entirely confined to the growth to be removed, and are not a source of danger such as may arise if forcible traction be applied for the delivery of a tumour incompletely sectionised. The time occupied is of small consequence to the patient. The haemostasis is all but complete after the previous ligation of main vessels. The steady pressure maintained by the growth till extracted controls any minor bleeding.

The technique of the operation employed by me has been similar to that adopted by other operators,—to bare the main blood-vessels and secure them with fine silk before dividing them; to withdraw the uterus and tumours, without or with preliminary sectionisations; finally, to pack the aperture, in the vaginal roof, lightly with cyanide gauze, and to steady the edges of the broad ligaments towards the vagina by pressure forceps.

The forceps and gauze-tampon are removed at the end of forty-eight hours. All subsequent dressings are external.

I have divided the perineum when necessary for access to the tumour, and I prefer a central to a lateral section, suturing the wound at the close of the operation.

A normal saline solution from a syphon-irrigator keeps the parts clean throughout the operation; and with the lithotomy position of the patient, secured by a Clover's clutch, the shoulders of the patient ought to be raised so as to avoid washing any debris through the divided vaginal roof into the general peritoneum.

The local preparation of the patient has invariably been by at least four, 1-4000 perchloride, vaginal douches, spread over the two days prior to operation, and by thorough external ablutions, soap-and-water, before each douche. After operation there were rises of temperature to 99°, 100°, and 101° in a few cases; afebrile recoveries in most cases.

Before closing my paper, I confess to having accepted the basis principle that hysterectomy is a justifiable operation for

fibroids, and that enucleation is not generally applicable. If hysterectomy be a justifiable operation, it is incumbent on operators, if possible, to take the advantages vaginal hysterectomy offers in suitable cases, some of which have, in the past, needlessly suffered the additional risks and consequences of abdominal hysterectomy.

Dr BRIGGS, in reply, said he had no desire to overestimate the position of vaginal hysterectomy in the treatment of uterine myomata, or to maintain that there were not alternatives in one or more of the cases he had read. When the symptoms justified operation, more and more operating would lead to improved precision in the choice of operation, and to better results for the patients.

NINTH ORDINARY MEETING, HELD ON 3RD FEBRUARY 1898.

Miscellaneous business.

THE PRESIDENT, on behalf of the Council, moved—"That the congratulations of the members of the Institution be offered to Dr J. M'Murray on his election to the Mayoralty of Bootle." This was carried with acclamation.

Removal of the Tongue.

MR MITCHELL BANKS gave a brief outline of the various methods hitherto employed for the removal of the tongue, in whole or in part, all of which he had tried with the exception of the thermo-cautery. In many serious cases in which the disease was extensive and far back he had employed a preliminary laryngotomy, which saved loss of blood, and which notably prevented the septic pneumonia so fatal in tongue cases, by avoiding the sucking of the blood into the lungs during the operation. During the last few years he had made use of the semicircular incision under the jaw, which was first

thought of by Regnoli fifty years ago. By this a remarkably free access to the diseased parts was obtained, so that the tissues might be quietly clipped with scissors down to the lingual arteries, which were secured before being cut. The whole proceeding could be effected without any bleeding into the throat at all; the blood ran outside the mouth, not into it. Again, if the incision was not quite closed, admirable drainage was obtained from the very offensive discharge which would otherwise accumulate in the floor of the mouth, and did not get well away after the ordinary operations. Finally, the affected glands could be readily eradicated.

A Series of Operations for Dilated Stomach.

MR RUSHTON PARKER read a short paper on seven cases, explored or otherwise operated on, for the relief of dilation of the stomach.

A married woman aged 37 had suffered from indigestion, off and on, for twenty-four years, and had, during some months before her admission to hospital on 2nd April 1895, been under treatment for ulceration of the stomach.

She remained three months in a medical ward, and was treated by washing out the stomach. That organ was greatly dilated, and visible through the abdominal wall. Before admission she had pain, worse after food, and only relieved by vomiting, which took place about three times a day. The movements of her stomach and the rumbling were so violent as to keep her awake at night. Temporary relief was given by the washing out, and later by curtailing her diet; but distress returned, and she begged for relief, readily consenting to operation. This was done on 14th August 1895, after washing out the stomach with salt water several times on that and the preceding day. The abdomen was opened in the middle line above the umbilicus, and the pyloric end of the stomach found much marked with cicatrices. The pylorus itself was greatly narrowed, appearing no thicker than a cedar pencil outside all.

The narrowed part was laid open for about $2\frac{1}{2}$ inches, and one of Mr Mayo Robson's decalcified bone bobbins inserted, as suggested by him in the *British Medical Journal* of 20th July 1895. The stomach was washed out again through the operation wound, and found to be quite clean.

Some difficulty existed at first in getting the pylorus into an accessible part of the wound, and in putting in the bobbin, which was of large size; but when once in, the bobbin facilitated the sewing up, and kept the edges well together. A continuous silk suture was put through the mucous membrane, and another through the peritoneum. The parts exposed were washed with hot water, and the abdominal wound sutured without drainage-tube. Healing took place without suppuration, and the patient made a speedy recovery, eating meat on the tenth day, and then continuing with ordinary diet.

After a few weeks she went home into Monmouthshire, and I received a letter from her this morning (3rd February) saying that she has been thoroughly well and strong ever since, and has had no trouble in any way with her stomach.

On 16th September 1896 I explored the stomach of a young man aged 22, who had symptoms of pyloric obstruction, and in whom there was found a growth so apparently malignant that I closed the abdomen again. He died shortly after, and at the post-mortem the growth appeared very different, and microscopic examination revealed no malignant disease. I regretted very much not having here done pyloroplasty, which might have saved his life.

The following year I operated in a third case, in a man aged 52, who had had pain, vomiting, and other symptoms of pyloric obstruction, with the presence of a tumour. On 5th May 1897 I operated; and although there was a distinct tumour in the front of the stomach, somewhat encroaching on the pylorus, it did not actually invade the outlet, which it evidently indirectly narrowed.

I had previously determined to give pyloroplasty a good trial even in malignant disease, whenever practicable, and accord-

ingly here performed the operation, in somewhat the same fashion as in the first case.

On opening the pyloric region there was exposed to touch, and partly to sight, an indurated ulcerated tumour of the stomach, that I took to be carcinoma. The patient recovered quickly from the operation, and soon became enabled to take a moderate amount of soft food. He eventually resumed ordinary diet, and returned to work in a mineral-water establishment at Wrexham.

Last November he came over to see me, and, with the exception of a certain degree of dyspepsia, seemed not only none the worse, but he was well nourished, fairly vigorous, and evidently much better. His medical attendant, Dr J. A. Eyton-Jones, kindly undertook to regulate his diet for these dyspeptic symptoms.

The next was that of a woman aged 35, who came under operation last October for a similar condition, also attended with tumour. The symptoms were, first, pain in the back and stomach, of some eight months' duration, coming on about half an hour after food. Some six weeks previously she began to vomit after food, and a week later there occurred a little bright blood in the vomit. On giving up solid food, the vomiting and pain ceased, but emaciation resulted, also constipation and dilatation of stomach; moreover, there was a distinct tumour, about the size of a walnut, to be felt near the umbilicus.

Pyloroplasty was performed on 29th October 1897, and through the opening in the pylorus the tumour of the stomach was both felt and seen. It was situated to the left of the pylorus and in front, and at first was presumed to be carcinoma, from its hardness and thickness. On slightly prolonging the incision, the inner surface of the lump was distinctly seen, and had a central circular excavation of about the diameter of a shilling, surrounded by a mass of induration, shelving off. The base of the ulcer appeared to be the sub-mucous layers of the stomach laid bare, and the indurated portion was apparently confined to the sub-mucous tissue, greatly thickened. The

distinct impression which I then derived from this inspection was that the disease was, after all, non-malignant, and that the case was one of simple ulcer, with an unusual amount of surrounding induration. This impression was shared by others present. The pylorus was widened by the method of suture adopted in previous cases, in effecting which the insertion of Mr Robson's bone bobbin materially assisted as before. Simple, uneventful healing of the wound took place right off, as in the other cases, but the after-treatment of the patient in the matter of feeding was conducted on the lines adopted for gastric ulcer in the medical ward, where she remained for the purpose for three months, in bed. She got up and returned home before Christmas. This and the preceding case have a good deal in common. In both there was an ulcerated mass of induration near the pylorus, but not directly implicating it, though indirectly obstructing the outlet. The operation was done, in the man's case, merely to widen the pylorus, and in the hope of relieving part of his symptoms, which it apparently did. In the woman's case the disease, on inspection, seemed to present gastric ulcer in a novel and unexpected light, namely, coexistent with tumour, and led to the question whether, after all, the man's case was not one of the same kind? But I learned yesterday that the man, after going on well since last seen on 5th November, took ill again on 31st January 1898, with a return of sickness and pain—otherwise he would have attended here to-night. The same day the woman came to show herself at the Infirmary, with similar symptoms, and a very distinct feeling of tumour under the scar in the epigastrium. As in his case, much improvement, and a gradual toleration of food, to the extent of being able to eat fish, had occurred after the operation; but it is to be feared that in both the disease is progressing, and that it is carcinoma, as at first supposed.¹ A fifth case came

¹ In the woman, the abdomen was opened on 14th February in the old scar, and the stomach explored, showing an indurated tumour of the stomach, as previously felt through the abdominal wall. Everything appeared so accessible

to my notice in November 1897, a month after the fourth. The patient was a man aged 38, in whom the symptoms, including tumour, pointed to malignant disease. There was, moreover, more emaciation than in the previous cases. The stomach was exposed on 17th November 1897, and the pylorus found encroached upon by an indurated growth that appeared neither more nor less malignant than that in Case II., where the supposition of malignancy arising at the operation was contradicted afterwards. But a couple of lymph glands removed at the operation demonstrated microscopically the malignant nature of the disease, the day after operation.

Pyloroplasty was accomplished on the under surface of the organ, necessitating division of the blood-vessels passing in and out of the lower margin. Much difficulty was experienced with the sutures, which, however, were effectually put in. In this case the bone button could not be kept in place, so it was dispensed with. The patient succumbed four days later, but no septic or other accident had occurred, and his death seemed due purely to weakness, which prevented him from withstanding the shock. At the post-mortem examination Professor Boyce found the pyloric wound soundly closed, and free from any leakage or evidence of septic processes. The growth, that at the operation was hard, had now almost disappeared, both to touch and sight, owing apparently to post-mortem digestion, and microscopic sections at first failed to show malignant structure. In view, however, of the distinctly infected lymph gland, the investigation was persevered in by Mr Dutton, pathological tutor, and eventually, though indistinctly, demonstrated.

and convenient for extirpation that the operation was undertaken at once, after consultation with my colleagues. A portion of the stomach was successfully excised, but not the pylorus, which was allowed to remain, the disease having been situated to the left of it. Details are given on page 281. At the time of writing this note, end of May 1898, the patient had become stout, and in very good health for the present. The man became invalided and dyspeptic for several months, but improved again, and at the end of June 1898 was active and vigorous, eating almost anything, though a tumour was to be felt in the epigastric region.

A sixth case was that of a woman aged 53, suffering from the same symptoms, and a tumour, varying in situation. The abdomen was opened on 31st January 1898, and the stomach pulled out easily. At the pylorus was an indurated swelling, evidently carcinoma, extending somewhat to the left along the small curvature. A single small lymph gland, indurated and carcinomatous, was removed with the finger from the upper edge of the growth. Pyloroplasty was performed without bobbin, and the stitching effectually accomplished, although the growth was divided in one part of the incision. The tumour was very localised, and I almost persuaded myself to perform pylorectomy; but even the pyloroplasty was attended with much temporary depression, and I think the larger operation would have been hardly borne by her. The patient has had no bad symptom, and is up to the present going on quite well and comfortably.

This operation of pyloroplasty is a product of the last twelve years or so, devised by Heinecke, and taken up by other German surgeons, whose example has been followed in other countries. It is admirably adapted for non-malignant stricture, and is an important advance in surgical resource, when so applied.

Out of the six cases here quoted, it has so far been only really curative in one, but possibly might have been in a second. Yet, in two others it has been distinctly beneficial in a temporary way, and for a time appeared to have answered completely, not only for relief, but as a means of thorough exploration and diagnosis. I fear that serious relapse and fatality may be the issue of these two cases, but they and the last are still in progress, and their ultimate result has yet to be known.

The cases in which pylorectomy could succeed are only occasionally met with, and of these six instances there are perhaps two to which it might have been applied, though only one in which any notion of that operation occurred to me at the time. The circumstances giving support to the project are not often all present—smallness of growth, absence of glands, strength of

patient. I had not felt any keen disposition to practise pyloroplasty, at the time of exploration, until the sixth case, and only abandoned the idea then because of the very doubtful advantage. But suitable cases now and then present themselves (as in note, p. 277), and experience has shown great temporary success, sufficient to warrant the attempt when the conditions are favourable. The remarkable thing, however, is the great apparent activity and vigour of many patients who have undergone the preliminary stages of starvation, owing to the necessities of their case. This activity and vigour are apparently great only so long as the patients are left alone, but under operation their weakness becomes so manifest that death readily occurs from shock.

I have brought forward these cases as a study of pyloroplasty. They show its easy possibility when the stomach is loose, and its feasibility, even under difficulties, when the pylorus is bound down deeply. Incidentally, they have proved of service in the exploration of cases attended with dilated stomach owing to pyloric obstruction.

Before concluding, I should like to relate a seventh case occurring in a man aged 53, sent in by Dr Sykes of Formby, suffering from dilated stomach, emaciation, and pain after all food, even milk. Three years before, he had had haematemesis, and was treated by Dr Glynn for gastric ulcer, with complete recovery, and immunity from all symptoms for nearly two years. He was supposed to have idiopathic dilatation; and after repeated washings out of the stomach with salt and water, the abdomen was opened on 5th August 1897. But the pylorus was wider than I have ever seen it, and so the stomach was left alone and the abdominal wound closed. He recovered at once, and has never had any trouble since. On 2nd December 1897 he was present here at the Liverpool Medical Institution, on the clinical evening, and claimed to be in excellent health, which his appearance confirmed. What his condition exactly was I will leave the physicians to decide, but apparently it was something of the nature of abdominal ptosis,

affecting the stomach functionally, without structural alteration of the pylorus.

Removal of portion of Stomach for Malignant Disease.

A woman aged 35, upon whom pyloroplasty had been performed in October 1897, and whose case has been related in that matter in a paper read by me at the Medical Institution on 3rd February 1898, and printed on another page of this journal, was submitted to abdominal section and exploration of the stomach on 14th February 1898. The stomach was found loose and accessible, and a hard growth on the anterior wall, well to the left of the pylorus. Her symptoms were pain, emaciation, and digestive troubles, with inability to retain more than insufficient quantities of food.

The case seemed eminently suited for extirpation, if only her strength were equal to the ordeal, and it appeared to me to be proper to undertake it. Mr Paul was consulted and concurred, so the operation was done at once. The growth and adjacent portion of the stomach to left of the pylorus were isolated with Lane's clamp, and after division with scissors, the cut ends were united by means of continuous silk sutures, one through mucous membrane, and another through the peritoneal edges.

The pyloric section being smaller than the other, the remaining gap, after uniting one to the other, was separately closed by a line of similar sutures. The operation occupied little over an hour, and was as easy as such an operation could possibly be, and probably much easier than the majority of such operations have been, by reason of the looseness and accessibility of the organ. The patient made a simple and uneventful recovery. On the day of operation she was a good deal reduced and in pain, but at no time did she appear to have been dangerously affected by the procedure. No doubt this tolerance was favoured by the long schooling she had had in a reduced diet, which, though liquid, had sufficiently nourished her. In a month's time she was quite well, and eating ordinary food.

In the course of May 1898 she called to show herself, and was fat and well, and able to eat anything. No appliances of any kind for uniting the cut surfaces were used in the operation, but Lane's clamps greatly facilitated the whole procedure.

Dr HILL referred to a case of idiopathic dilatation of the stomach, following enteric fever and acute rheumatism, recorded by Mr Bennett some two years ago.

A long fold on the anterior surface of the dilated stomach was involuted, and the two opposing peritoneal surfaces stitched together, thus considerably diminishing the size of the viscera. There was no malignant disease, nor adhesions about the pylorus. Relief followed the operation.

In reply, after the discussion,—

Mr RUSHTON PARKER drew attention to the striking difference manifested after death in the growth of the two fatal cases, as compared with the condition observed in the operation. In both cases a hard, distinctly prominent growth had become soft and level, with great indistinctness of microscopical structure. This change appeared due to post-mortem digestion. None of these tumours surrounded the pylorus, and not until the second operation in Case 4 did he do pylorectomy. The conditions favourable for pylorectomy seldom occurred, owing to the most important of all—the necessary strength of the patient—being so often wanting.

TENTH ORDINARY MEETING, HELD ON 17TH FEBRUARY 1898.

Case of Acute Anterior Poliomyelitis in an Adult.

DR T. R. BRADSHAW showed a man 26 years of age, who had had an attack of acute anterior poliomyelitis. There was wasting of various muscles in both arms, the appearance sug-

gesting progressive muscular atrophy. The paralysis came on acutely during a sharp febrile illness last May, and was followed by rapid wasting. The legs were not affected at any time, there was no tendency for the atrophy to spread, and a gradual improvement was taking place. Dr Bradshaw pointed out that the mode of onset, the distribution of the paralysis and wasting, indicated that the case was of the same nature as the acute spinal paralysis of children, and alluded to the extreme rarity of the affection in adults.

MR NEWBOLT read a case of arterio-venous aneurism of the popliteal vessels, in which he had ligatured the artery and vein with success.

The patient, a man aged 23, had run a spicule of glass into his right leg four weeks previously, and an arterio-venous aneurism had formed, as a result of the injury. The popliteal artery was tied above and below the wound in it, and the hole in the vein was sutured; but as haemorrhage ensued on removing the tourniquet, the vein was also tied above and below the wound in it. The man made an excellent recovery, the only difficulty being in the final healing of the wound, which took some time to granulate up. No pulsation could be detected in the vessels at the ankle-joint three months after the operation.

Mr Newbolt had found seven cases recorded in which these vessels had been ligatured simultaneously, and in only one did gangrene occur. A full report of the case, with remarks, is published in the *Lancet*, 23rd April 1898.

DR PERMEWAN showed—

(1) A patient from whom he had removed a small pedunculated tumour on the front third of the left vocal cord. There had been complete aphonia for three years, but the voice came back immediately on removal of the growth. This was of a cystic character, containing blood, and collapsed when seized by the forceps.

(2) A case of transverse web on the trachea, resulting from cicatrisation of an old syphilitic ulcer. About half of the section of the trachea seemed occluded. There was dyspnoea, but not very marked, and aphonia, due no doubt to the interruption of the blast of air by the web, as the cords moved perfectly.

Black-water Fever.

MR STANLEY KELLETT SMITH read a paper upon "Black-water" fever.¹

The clinical features and the geographical distribution of the disease were described, and certain points in its pathology criticised. Especial attention was drawn to the administration of quinine in these cases. As a curative agent it was ineffective, and this fact had been taken to show that "black-water" was not a pure malaria—that it was a separate infection, or that it was malaria plus a separate infection. The failure of quinine, however, was capable of another explanation, viz., that its aggressive action upon the malarial parasite was cloaked by its own destructive action upon the red blood corpuscles (as shown by Lepine's experiments), and by the irritant effects of its excretion upon the kidneys. "Black-water" fever gave impression to the traveller as being indissolubly bound up with the malarial process; and the more intense that process in any particular district, or at any particular season, the more frequent was the "black-water" complication.

The following conclusions might be ventured as regards the pathology of the disease:—That "black-water" fever is distinctly malarial in nature; that there is no evidence of any specific difference between its parasite and the ordinary malarial parasite of the country in which it occurs; that its parasite exists in great numbers in the blood of an infected person; that enormous destruction of the red cells takes place by habitation of the parasites, and possibly also by direct action of toxins produced by them; that the derivatives of the colour-

¹ A full account of the paper was published in the *Lancet*, 19th March 1898.

plasma of the destroyed cells become dissolved in the blood, its serum showing the presence of oxyhaemoglobin, haematin, and urobilin (Boison); that the liver and spleen, from the circumstances of a present attack and from the effects of previous malarias, are unable to manipulate these derivatives; that they are therefore excreted by the kidneys, which in the process may become so inflamed as to show actual haemorrhages—a result favoured by the cachexia of the white man dwelling in a malarious country.

Dr CARTER drew attention to the great value of Warburg's tincture in the disease, mentioning a case in the Royal Southern Hospital which seemed almost hopeless, but where, after the second dose, great relief ensued on the occurrence of perspiration, the fever assuming an intermittent instead of a remittent type, and the patient recovering. There was given to this patient also a dose of opium.

DR NATHAN RAW read a paper on the value of antistreptococcic serum in puerperal fever.¹

He mentioned a case which was admitted to the Mill Road Infirmary fifteen days after confinement, with a temperature of 106°, and semi-unconsciousness, evidently suffering from acute streptococcic infection.

He dilated the cervix under chloroform, and curetted and thoroughly washed out the uterus of stinking debris, afterwards injecting 20 c.c. of serum; this produced good results, and was followed by three more injections of 10 c.c. each. The later injections caused severe symptoms, including thrombosis of veins, and acute pyelo-nephritis, which led him to suspect the serum to be impure.

Bacteriological examination by Dr Hill showed the dried serum to contain living streptococci, probably accounted for by defective filtration.

Dr Raw was of opinion that in acute streptococcic infection

¹ Full account published in the *Lancet*, 19th February 1898.

the serum was of great value; but urged that such a powerful remedy should be only used after examination of the discharge, or blood had been shown to be due to streptococcus, otherwise the serum could be of no value whatever.

Dr HEATHERLEY drew attention to a paper read by Mr Turner at the Guy's Physical Society, in which it was stated that the Pasteur Institute had succeeded in obtaining a serum by injecting pure toxines, thereby placing it on the same basis as diphtheritic serum. The details were being kept secret, but it was apparently much more powerful than that previously prepared by injecting living cultures.

E. T. DAVIES made the following remarks:—

An important feature in the case was a period of fifteen days between delivery and the time the patient came under Dr Raw's observation. This fact goes a long way to prove that the case was one of sapræmia—putrid intoxication—and not septicæmia. Also Dr Raw tells us the uterus was dilated and reached as high as the umbilicus, and that it contained remnants of placenta and decomposing debris, which he cleared out, and douched the uterine cavity with antiseptic solution. I believe if Dr Raw had been content with this the urgent symptoms would have soon subsided, and that the desperate symptoms which supervened subsequent to the injection of the antistreptococcic serum were caused by the serum, and not by the original disease. Such facts as Dr Raw has brought before us ought to make us chary of the use of such a two-edged remedy as antistreptococcus serum as a routine in obstetric practice. The diagnosis in each individual case should be clear and unmistakable, whether we are dealing with sapræmia or genuine septicæmia.

Dr ABRAM pointed out that in most of the cases mentioned, where no apparent benefit accrued from the use of the serum, that there was no proof that the patients were actually suffer-

ing from streptococcus infection. It could not be too strongly urged, that in all cases where new and potent sera are used, that care should be taken to ensure the use of the appropriate serum, which could readily be done in most cases by means of a bacteriological examination. It is obvious to anyone that to use antistreptococcic serum for an infection due to any organism other than the streptococcus must of necessity be futile, and, moreover, may lead to the disuse of a remedy, the value of which in appropriate cases has, to my mind, been already shown.

Dr STANFIELD congratulated Dr Raw on the successful issue of his case. His own experience had been that in many cases clearing the uterus of offensive matter, douching with 1 in 4000 perchloride lotion, and curetting if there was suspicion of adherent membrane, had at once brought down the temperature, and the patient recovered without further treatment or medicine. He thought the simultaneous injection of the serum nullified the good effect of Dr Raw's other treatment, and that, so far from the first two injections being credited with the woman's ultimate recovery, they were answerable for the tardiness thereof. He (Dr S.) had used the serum last week in a similar case (except that there had been scarlet fever in the house), and was sorry that he did so: had he given Warburg's tincture, he thought the result would have been different.

ELEVENTH ORDINARY MEETING, HELD 3RD MARCH 1898.

Two Cases of Strangulated Hernia; Enterectomy, Murphy's Button; Recovery. By HENRY G. RAWDON, F.R.C.S. Ed., Surgeon, Liverpool Royal Southern Hospital.

THE first case is that of John P., aged 38, a butcher by trade. On 23rd September 1897, at 4 p.m., when lifting a weight, he

suddenly slipped, but recovered himself, continuing his work for some time. Later he experienced pain in the groin, and noticed a distinct swelling in that part; in a few hours it became much larger, and the pain very severe. He vomited repeatedly during the night. Next day, 24th September, he was seen by Dr Holland, and by his direction removed to the Royal Southern Hospital. On admission the hernia was found to be extremely tense and tender to the touch—it was the size of a man's fist. It occupied the inguinal region, lying more above than below Poupart's ligament, and did not pass into the scrotum at all. Soon after admission I operated. Taxis had not been attempted. There was a considerable quantity of bloody serum in the sac, which contained a large loop of highly congested gut, but no omentum; the entire surface bled freely when touched, from the peritoneal capillaries. Having divided the contracting band, which was at the deep or external ring, I easily returned two-thirds of the strangulated bowel, but failed to reduce the rest, notwithstanding that the sac was kept well on the stretch, but unexpectedly the bowel gave way—burst, in fact. Clearly, under these circumstances, the best plan to adopt was excision of the strangulated intestine.

The mesenteric attachment having been carefully ligatured with fine silk, the bowel was resected, the division being made at a safe distance about $\frac{1}{2}$ of an inch from the points of constriction. Murphy's button was used. Unfortunately, the only one in the hospital at the time was too large, but still I managed to use it. There was throughout a very unusual amount of oozing of blood from the general peritoneal surface; and as some had escaped into the abdominal cavity, that cavity was well washed and flushed out, and a glass drainage was introduced into the pelvis. The peritoneum was secured round the tube, and the canal and ring were closed with silk-worm gut to effect a radical cure if possible. The stitches were made to include the skin, to facilitate their ultimate removal. It is important to record that as the testis, which was in the hernial sac, was ill developed, was half the natural

size, and was arrested in the canal, I excised it. It lay under the hernia, and probably was the real cause of the difficulty experienced in the reduction of the rupture.

After the operation the patient had no recurrence of vomiting, and was free from pain. During the first few hours a considerable quantity of bloody serum was sucked up through the drainage-tube, which could not be removed before the evening of the third day. He slept well, and each day expressed himself as feeling well. His tongue was clean, and pulse good, and he had a nearly normal temperature.

For the first day or two he was only allowed a little water and a few teaspoonfuls of milk every two hours, the quantities being gradually increased. He seemed to be doing satisfactorily, when suddenly, without the slightest warning, on the fourth night, he got out of bed and walked about the ward (possibly due to the temporary insanity of starvation). A little stimulant and a little more food soon put him all right, and from that time he steadily improved. He is now quite well, and following his usual occupation. After the first few days his bowels acted regularly and comfortably, but, as far as could be ascertained, he never passed the button, although it was well looked for.

CASE II.—James B., aged 39, a dock labourer, was admitted into the Liverpool Royal Southern Hospital on the evening of 4th February 1898, suffering from strangulated hernia on the right side. He had worn a 'truss' for some years. While at work at 11 A.M. the rupture suddenly came down, the first time for seven years. It was understood that taxis had been attempted before his admission. He had had but little vomiting, and altogether the symptoms were certainly not urgent. During the night he only vomited once, and that before midnight. I operated early the next morning, 5th February. The integuments over the rupture were discoloured and ecchymosed to some extent. On opening the sac I found a large loop of bowel, no omentum, badly strangulated, and in a very far gone condition, blackish and deep purple in colour, although

not gangrenous. Nevertheless, I thought it extremely doubtful if the gut, which consisted of some 12 inches of small intestine, would recover itself if it were returned. I decided, therefore, to excise it, and ligatured its mesentery with silk, and again resorted to Murphy's button, using a small one, exceedingly suitable for the case. This was easily and expeditiously done, but before I could return the button within the abdomen I had to enlarge my incision in an upward direction.

There was no need to flush out the abdomen, but as a precautionary measure the glass drainage-tube was employed. The canal and ring were well closed by silkworm sutures. The tube was removed the following day, only a dram or two of blood-stained fluid being withdrawn. The patient progressed most satisfactorily, he slept well, was cheerful, and most contented under the enforced starvation adopted for prudence sake. He had one twinge of pain in the right iliac region, which was permanently relieved by a single hypodermic injection of $\frac{1}{8}$ of a grain of morphia. The bowels operated spontaneously on the third day, and he passed the 'button' on the twenty-first day. He is now quite well, and following his usual occupation, but wears a light truss as a precaution.

Remarks.—I could not fail to notice in both cases the remarkable absence of anything approaching to *shock*. It may be that the entire removals of intestines injured by strangulation may prove a safer procedure in severe cases than returning it. 'Murphy's button' answered well, but a yet more simple way of approximating the divided ends of the bowel may ultimately be hit upon.

Cuse of Friedreich's Disease.

DR GLYNN exhibited a boy aged 18, suffering from Friedreich's disease. There was no evidence that the affection was hereditary. His parents were living and healthy, and his grandparents lived to old age. The mother's only sister was alive and well. He was the youngest of seven children, all

living and healthy but one,—a sister, who had died from phthisis at the age of 18. The mother had fits when young, and at the age of 20 was confined for a short time in an asylum. He was a healthy baby; walked at the age of 12. Had suffered from no infantile disorders. The patient was under-developed for his age, looking like a boy of 14. The first symptoms—want of control of the upper extremities—appeared about the age of 10. At the age of 14 he commenced to reel in walking. He presented all the symptoms of Friedreich's disease in a typical degree,—deficient equilibration, and ataxia, pseudo-choreic movements of head and extremities, nystagmus, defect of speech, absence of knee-jerks; also characteristic scoliosis and deformity of the feet. The pupils were normal, the bladder functions were unimpaired, and there was no history of pain.

He had improved much under massage, so that he now could feed himself, and walk with the assistance of one person's support.

MR BANKS showed a hydatid cyst, about the size of an orange, which was removed from among the adductor muscles of the thigh in a boy of 13. A swelling had existed in this situation for three or four years. At one time it diminished a good deal in size, but increased again; and a few weeks before the boy's admission to hospital it had increased pretty rapidly, and was also giving rise to a certain amount of pain and discomfort. It was evident that the tumour was not a sarcoma, for in that case the boy could not have lived with it, while fatty tumours in children are almost unknown. As there was a distinct feeling of fluctuation, the diagnosis lay between chronic abscess and cyst; and from the consideration of various minor points a diagnosis was made at clinical lecture of the latter; and in that case of hydatid cyst. This view was proved correct by tapping, the cyst being in a state of partial inflammation and disintegration as regarded its contents. The sac wall was very thick and intensely adherent to

the adductor muscles, which made its removal a matter of considerable difficulty, accompanied by very severe bleeding.

The New Tuberculin. By JOHN HILL ABRAM, M.D.(Lond.),
M.R.C.P., Assistant Physician, Royal Infirmary.

IN April 1897 Professor Koch published an account of his latest work upon tuberculin; and inasmuch as the new preparation differs greatly from the original one, I wish to bring the subject forward.

In this paper Koch points out that ideal immunity is both poison and organism immunity. He claims that the new preparation, Tuberculin T.R., possesses the power of conferring organism immunity; and further, that when the action is complete, no reaction takes place on the administration of full doses of the original tuberculin preparation.

The new preparation is obtained by pounding up young virulent cultures of tubercle bacilli, treating with distilled water, and centrifugalisation. The deposit is dried, again powdered, and again centrifugalised. The final clear fluid is the new tuberculin. The fluid is preserved by the addition of 20 per cent. of glycerine, and 1 c.c. contains 10 milligrammes of solid substance.

Koch recommends for a suitable first dose $\frac{1}{500}$ mg. of solid substance, as with this dose there is no reaction as a rule. The injections may be repeated every second day, but the dose must be increased so slowly that no greater rise of temperature than half a degree occurs. If any rise should follow, it must be allowed to subside before a further dose is given. As a rule, the final dose is 20 milligrammes. In man, immunity is present only when doses of 0.5 to 1 gramme are reached; hence the preparation cannot be used when the patient's prospect of life does not exceed a few months.

In cases of mixed infection Tuberculin R. can do little, and Koch states that cases with temperatures above 38° (101°) are only exceptionally suitable for this treatment.

In pulmonary phthisis Koch notes the following results:—

slight increase, followed by gradual diminution in the adventitious sounds; diminution in quantity of the sputum; diminution of the physical signs. Weight was gained from the commencement.

If later experience confirms these results, we shall have much to thank Professor Koch for; and I have brought the matter forward in order that the method and its limitations might be known. I can add a report of one case treated by myself in the Royal Infirmary.

Fanny N., æt. 30, was admitted under my care for pulmonary phthisis. The family history showed no hereditary taint. The patient's illness began twelve months before admission, with anaemia and dyspepsia, followed by pain over the left shoulder. Three months before admission, cough and purulent expectoration began.

She was sparely built, slightly anaemic. Took her food well. Temperature normal.

Respiration 24 upper costal, sputum semipurulent, contains *tubercle bacilli*. At the left apex, back and front, impaired movement; harsh breathing; numerous rhonchi, and occasional crepitations. Slight impairment of resonance, with increased resistance.

The treatment was carried out exactly as Koch directs, up to the administration of 20 milligrammes, the final dose he recommends, with the following result:—She left the hospital practically well; the physical signs had all cleared up; the scanty expectoration contained no tubercle bacilli, and the patient had gained nearly a stone in weight.

Throughout the course there was no reaction and no rise of temperature of any moment. The urine never contained albumen. No skin rash presented itself. There never was any trouble at the inoculation points.

I must add two practical points,—first, the syringe used must be sterilised by boiling, and not by carbolic acid; second, the necessary dilutions should be made with sterilised normal saline solution.

I hope next session to bring some further results before the Society.

Dr LOGAN gave particulars of two cases in which Koch's methods had been used with encouraging results.

CASE I. was a lady aged 25, with early pulmonary tuberculosis. She was treated in the latter half of 1891 with Koch's original tuberculin, but as the first two doses produced haemoptysis, that was given up in favour of a modification thereof proposed by Dr William Hunter. Over fifty injections were given, and in four months the sputum, which had contained *B. tuberculosis* in abundance, now contained none, and their absence has been proved to continue by repeated examinations up to this date. This patient has been cured of tuberculosis, but an injured lung has remained, which has given trouble from time to time.

CASE II. was treated with the new tuberculin. Her disease began in May 1897, and in October, when the injections commenced, the apex of the right lung and the mid-lobe of the left were distinctly involved. The sputum contained many tubercle bacilli. The injections were continued until 20 milligrammes of solid substance were given. The chest signs diminished, the general health improved, and repeated and very careful examination showed that the bacilli had almost disappeared from the sputum.

Dr Logan believed that pulmonary tuberculosis might possibly be cured, and yet a serious septic condition of the lung might persist, and that it was therefore important to begin treatment before septic infection was well established.

Dr MACALISTER considered that it was unnecessary in every case to attain the maximum doses recommended by Koch; and he related a case and showed the temperature charts of a patient (a girl æt. 15) who had physical signs at both apices, and had been under observation and treatment for about five months with ordinary remedies, without appreciable improve-

ment. The temperature during the whole of this time had risen in the evenings to 100°, to 101°, and occasionally to 102°. The sputa contained tubercle bacilli. 1 in 1000 mg. of the new tuberculin was injected on 12th August, and was followed by a slight reaction, but on 16th March the temperature fell to normal. No reactions followed several subsequent injections until 27th August, when again there was a reaction. The small doses were continued for a short time after this, and the patient improved greatly, the cough ceased towards the middle of September, and now—five months after leaving hospital—her health is good, the temperature normal, and the general nutrition improved. There is still some impairment of resonance at the left apex, but no evidence of active disease there or elsewhere.

Dr BUCHANAN pointed out that Koch bases his investigations upon the immunisation of animals by inoculation of Tuberculin T.R. previous to inoculation with pure tubercle; that is, he introduces non-living material to produce the necessary change. He draws an analogy also from the rare cases in man of acute miliary tuberculosis in which natural immunity is produced—the disease breaks down, and the patient recovers. He considered that the logic of Koch's method is on a wrong foundation, for he does not introduce a material antagonistic, like immunised serum, but one which anyone already infected with tubercle is absorbing *intra vitam* day by day; hence he introduces more of what a patient already has, and yet cannot make use of. In other words, he endeavours to produce rapidly in a patient a condition which the latter is unable to furnish at the outset from his own resources in reference to his tubercular injection. Such as are able to present this condition primarily, Dr Buchanan has no doubt recovered spontaneously. It is held, however, that T.R. stimulates the cells to increased activity in opposing the bacilli. Supposing we assume this, the principle of stimulation is really an unsatisfactory one—a case of “live horse and you will get some grass”; and if the

grass is the only thing left unprovided, such stimulation must be paid for by future sacrifice. Now, immunisation in animals, against a pure artificial tubercular injection, is quite different to the disease in man, which is generally a complicated one. Dr Buchanan would ask, how many cases are pure injections ? Koch states that in mixed injections T.R. is useless ; and he holds further, that all cases in which the temperature rises to 100·4° F. are mixed injections, and that in them T.R. must not be used. This reduces the limits of his possibilities to a minimum —such cases seldom presenting themselves for treatment. The growth of the tubercle is slow, and at every fresh development resistance must be reinvolved : even if T.R. is to be used, it must be so for a very prolonged period ; and even then one cannot get away from the idea that a material is being supplied artificially of which there is already no lack, for the bacilli must supply it themselves *in situ*. Every absorption of this from the lesion causes a rise in temperature analogous to the reaction to the T.R. artificially introduced. Dr Buchanan considered that, so far, the results have not been encouraging, and that already cases have been recorded where T.R. has produced dissemination rather than immunisation.

The Treatment of Club-Foot.

MR R. W. MURRAY read a note on the treatment of congenital club-foot, and brought forward a series of cases upon which he had operated during the last seven years.

In infants he advocated subcutaneous division down to and including the calcaneo-scaphoid capsule, and subsequently of the tendo-Achillis, the deformity being at once over-corrected, and the foot fixed in plaster of paris.

In children who had learnt to walk, he removed a wedge-shaped piece of bone, irrespective of bones or joints, and large enough to allow of the deformity being easily and completely corrected. He said the mistake usually made was in not removing a sufficiently large wedge of bone. Mr Murray had

operated upon 78 infants, and had performed tarsectomy upon 51 feet in 41 patients.

Mr NEWBOLT advocated the use of the wrench in cases of club-foot, with few exceptions. He considered that all early cases could be cured in that way, and most of the latter cases which had relapsed or had not been treated at all. In cases corrected by the wrench, there was no loss of mobility and no shortening of the foot, no scars and no risk. The mechanical principles of the treatment must, however, be thoroughly understood; no foot is cured until the patient can hold it in good position of his own free will. The boot should be altered so as to keep up the corrected position. He complimented Mr Murray upon the exceedingly successful series of cases which he had shown.

Mr BANKS also spoke.

TWELFTH ORDINARY MEETING, HELD ON 17TH MARCH 1898.

Report of a Case (Patient shown) of Chronic Suppurative Otitis (R.), Mastoid Disease, Basal Meningitis, Paralysis of Left Facial and both 6th Nerves, Double Optic Neuritis, followed by Atrophy of the Optic Discs. By HUGH E. JONES, M.R.C.S., Ophthalmic and Aural Surgeon, Wigan Infirmary; Hon. Assistant-Surgeon, Liverpool Eye and Ear Infirmary.

THE interest of this and similar cases has several sides. (1) The result of early operative treatment; (2) The questions of diagnosis, which arise when the acute symptoms of septic absorption have been overcome and the paralyses come on—(a) growth of pons, (b) tubercle of pons, (c) tubercular meningitis of limited area of base, (d) simple meningitis, resulting from extradural abscess; and (3) The character of the neuritis, and its termination.

Nellie P., *æt.* 10 years.

Family history.—Father, mother, and six brothers and sisters are living and well. No history of tubercle could be obtained.

Personal.—Patient had scarlatina when 3 years of age, and this was followed by otorrhœa. Two years later (June 1892) a mastoid abscess on the right side was incised by my colleague, Mr Mitchell Roocroft. The abscess recurred in 1893, and was again incised by Mr Roocroft. The otorrhœa continued.

Present attack of acute illness.—This began about the 20th May 1897 with pain behind the right ear, and a lessening of the amount of discharge from the ear. The child having had a severe rigor on the night of 26th May, she was again seen by Mr Roocroft, who advised her immediate removal to the Wigan Infirmary, where she was admitted on 27th May, under the writer's care.

Condition on admission.—T. 106°, P. 144. Pupils were equal and moderately dilated. Patient was unable to stand, and was at the same time irritable, and in a state of semi-coma. No definite pareses could be made out. Some caseous pus was found in the right meatus; the mastoid, especially at its posterior border, was very tender to pressure. The scars of the previous incisions were quite firm, and there was no superficial abscess.

Operation performed 27th May, the afternoon of admission. An incision about 2 inches long was made along the line of attachment of the auricle. On retracting the skin and periosteum, we found an old fistula in the bone, firmly closed up by fibrous tissue. Following this up, the antrum was opened. This cavity was much enlarged, and occupied the greater part of the mastoid bone, and was filled with caseous pus and debris of bone. Its anterior and posterior walls were carious, and easily removed with the sharp spoon. A very small quantity of flaky pus was found between the carious posterior wall and the dura mater (*sulcus lateralis*). The dura was inflamed and easily lacerated. Slight haemorrhage from

the lateral sinus occurred, but was easily controlled by a small pledge of iodoform gauze; though the wall of the sinus was inflamed, if not actually necrosing; the haemorrhage showed that clotting had not taken place. No ossicles were found in the tympanum. The whole cavity—tympanum, meatus, and mastoid—was then carefully packed with iodoform gauze.

As no further operation was performed, it may be as well to complete the account of this part of the case now. The operation appears to have cut off, once for all, the supply of septic material. The temperature oscillated for five days, and then fell to and remained about normal. The wound rapidly assumed a healthy granulating appearance; and the packing being kept up, a permanent open canal was established from the external meatus through the tympanum to the surface of the mastoid. The effect of the operation upon the course of the disease appears to me to have been the arresting of a commencing septic phlebitis, and the preventing of a simple meningitis from assuming a fatal septic character.

Subsequent course of case.—

In the remaining description I have numbered the days from the date of the rigor and operation of 27th May. For the first five days the temperature oscillated between 97° and 104·4°; the pulse-rate from 88 per minute to 128. Patient drowsy and irritable. On the fourth day the symptoms of 'brain irritation' were very marked. Patient cries out when touched, objects to dressing of wound, and will not allow examination of eyes; is querulous and looks dazed; is very drowsy, but sleep is disturbed; abdomen retracted. Patient is pale, emaciated, and very weak; cannot hold things in her hands. There has been no vomiting except during recovery from effects of chloroform.

Paresis of the left external rectus has appeared to-day (30th May).

Eighth day.—General condition distinctly better. Examination of eyes (first time) showed well-marked double optic neuritis. The swelling of the papillæ was not great, and

their colour was greyish. The vessels were not much distended, and no haemorrhages were seen.

Tenth day.—General improvement maintained. Patient brighter and sleeps better. Bowels acting daily. Complete left facial paralysis (tongue not affected). Both 6th nerves paralysed. Cannot look outwards beyond middle line with either eye.

Twelfth to twenty-first days were occupied by a relapse. Diurnal variations of temperature of one or two degrees culminated on the 20th day in a temperature of 102·2°, delirium, and pulse-rate of 128. During this period the patient was drowsy during the day, restless and noisy during the night, and complained of pain in the head and nape of neck. Throughout there has been an absence of convulsions, vomiting, or of marked retraction of the head, or stiffness of the neck.

Twenty-second day.—I regard this as the first day of real convalescence. On this date the patient was still somewhat querulous, and could not stand alone. The knee-jerks were absent, but there was no inco-ordination of movements, no nystagmus, no difference in grasp of hands. The condition of the affected cranial nerves remained much the same for some weeks longer. Hearing of watch, R. nil, L. 6 inches.

Thirty-fifth day.—Could stand with assistance, and was dressed and sat up on couch.

A month later (29th July) the right 6th nerve had quite recovered, and the left 6th and 7th nerves were much better. Optic neuritis still present. After a stay in the hospital of nearly three months, the patient was discharged on 22nd August 1897. The child was nervous and emotional until January or February 1898, and then gradually recovered her natural manner.

The following tabular statement of the condition of various nerves at different dates, though far from complete, may be useful:—

Paralysis L. Ext. Rect. began 4th, recovered about 90th day
 " R. " " 10th, " " 64th day
 " L. Facial " " 10th, " " 70th to 90th day
 Optic neuritis when first observed { 8th day distinctly chang- } 4 $\frac{1}{2}$ to 5 mos.
 was well advanced { ing to atrophy }

The subsequent changes in the fields of vision and the central vision of the two eyes are interesting:—

Oct. 13, 1897.	L. V. — <u>6</u> 60	Field about 10° radius
	R. V. — <u>6</u> 0	" " 5° "
Dec. 7, 1897.	L. V. — <u>6</u> Jä 20 24	" " 30° "
	R. V. — <u>6</u> Jä 20 24	" " 10° "
Feb. 10, 1898.	L. V. — <u>6</u> Jä 0 0	" " 15° "
	R. V. — <u>6</u> Jä 16 24	" " 1° or 2° "
May 26, 1898.	L. V. — <u>6</u> Jä 6 12	" " 5° "
	R. V. — Hand.	" " pin-point

The vessels of both discs are still (May 1898) of very fair size; and while the colour of the right disc is dead white, the left is a very faint pinky grey. Pupils sluggish.

Remarks.—(1) If any proof were needed that a skin incision, or even the making of a small opening into the mastoid bone, was of little or no permanent value, it would be afforded by this case. After each incision the acute symptoms settled down, but the original source of infection—the tympanum—was practically untouched, hence the recurrences. Nothing short of complete removal of all diseased bone and other tissues, and the substitution for them of a sound cicatrix, ever does any real lasting good.

(2) After the symptoms of dangerous septic absorption had been overcome, and the paralysis of various cranial nerves appeared, the question of the causation of these paralyses was discussed. The diagnosis appeared to lie between a tumour

(tubercular, probably) of the pons, and a limited basal meningitis. The close proximity of the nuclei of the affected nerves in the pons, the implication of the nerves of the opposite side first, and the absence of many of the most common symptoms of acute basal meningitis (*e.g.*, vomiting, severe pain, and retraction of the head) seemed to favour the former diagnosis. On the other hand, there was not present the paralysis of the conjugate movement of both eyes to the side of the lesion, which is said to be present in disease of the pons; the optic neuritis was not of the violent type found in cases of tumour—as pointed out, there was never much swelling of the discs, and there was no history of tubercle, personal or family. Basal meningitis seemed the more natural diagnosis, because there was an effective cause present in the extradural abscess, and the superficial brain origins of the affected nerves (*viz.*, L. 7th and both 6ths) are near enough to be covered by a penny-piece. Although many cases of optic neuritis caused by various intracranial complications of middle-ear disease, many of which, if not all, are accompanied by more or less meningitis¹ (Lawford and Edmunds on the Pathology of Optic Neuritis, and Field in *British Medical Journal*, vol. i., 1897)—although many of these cases recover without any loss of sight, it is equally certain that others end in complete atrophy. Hutchinson published some cases in which atrophy of the discs occurred in the *Oph. Hospital Reports*, 1866. A most interesting case, similar in many respects to mine, was reported by Mr Ouston of Newcastle² in the *British Medical Journal*, 22nd January 1898.

In Mr Ouston's case there was paralysis of the sixth and seventh nerves on the *same side* as the mastoid disease. The advisability of exploring the cerebellum and temporo-spheroidal lobe was discussed with Professor Oliver. It was decided to wait, and the patient made a good recovery, with partial

¹ Cf. Lawford and Edmunds, "Pathology of Optic Neuritis," *Oph. Hosp. Rep.*, and Field, *B.M.J.*, vol. i., 1897.

² Ouston, *B.M.J.*, vol. i., 1898.

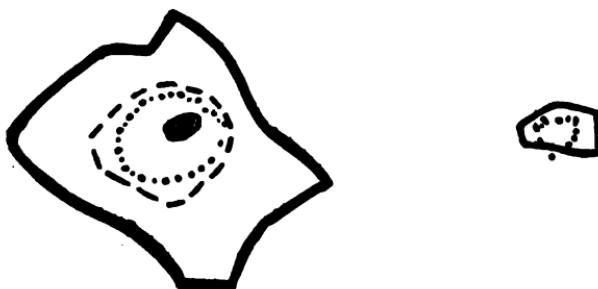
FIELDS OF VISION.

LEFT.

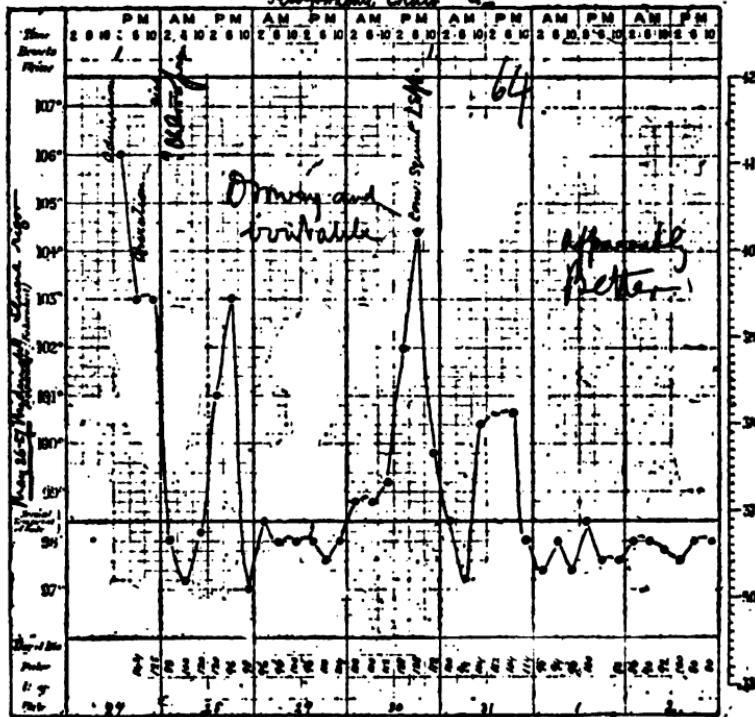
RIGHT.

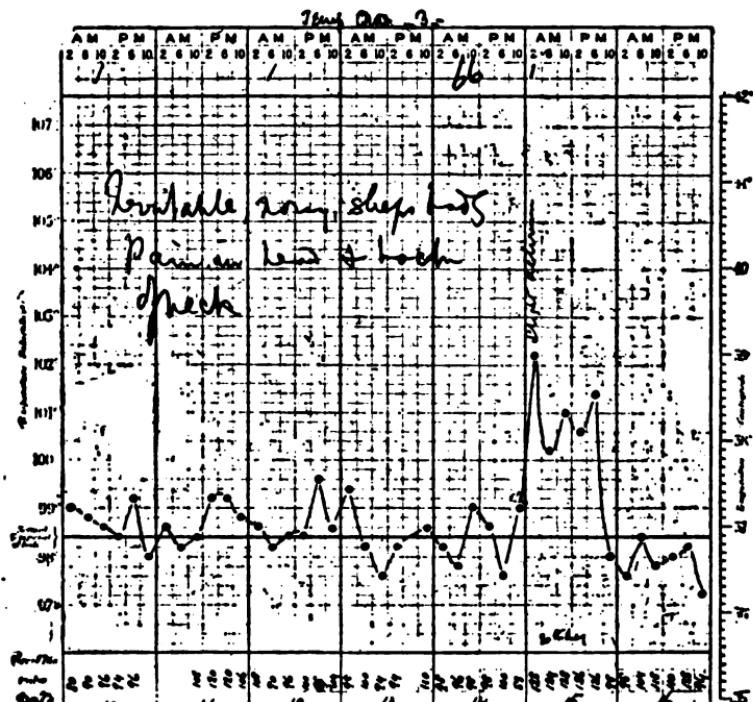
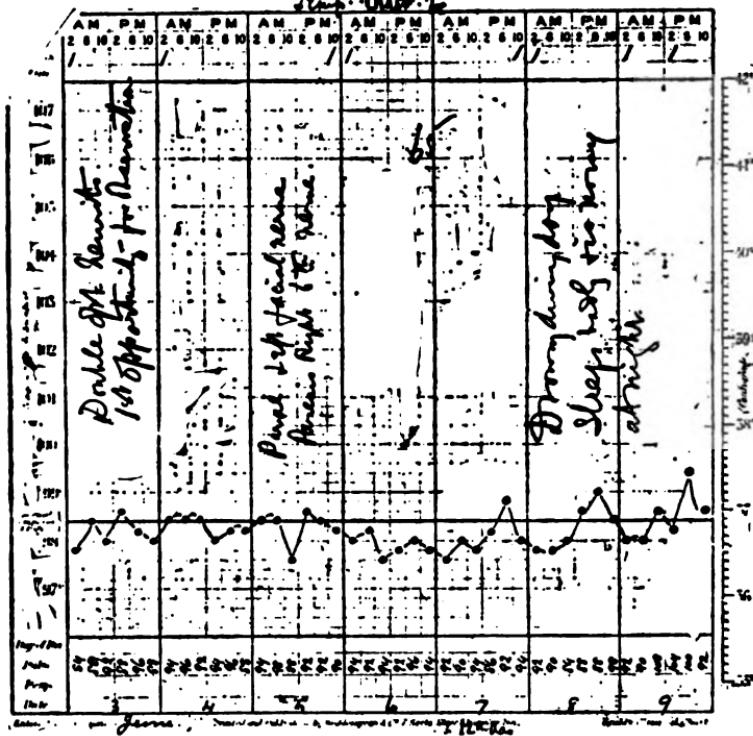
Date. Vision on that Date.

Field for white 20 mm. disc.	Oct. 18, 1897,	J ₆ ,	J ₆
	Dec. 7, 1897, ———	J ₁ , J ₂₀ ,	J ₁ , J ₂₀
	Feb. 10, 1898, ——	J ₆ , J ₈ nill,	J ₆ , J ₁₆ eccentrically { fields reduced
	May 26, 1899,	J ₁ , J ₆ , hand reflex	{ to fixation point.



Temperature Chart





atrophy of the left disc. In my case the question of further operation did not arise, and therefore the importance of making a full and correct diagnosis was not very apparent, but in Mr Ouston's case the urgent practical necessity of doing so is very evident.

Note on Two Cases of Empyema, due to the Diplococcus pneumoniae. By ROBT. J. M. BUCHANAN, M.D., M.R.C.P.

THE reason that I have noted these two cases is because of the growing recognition by clinicians of the close association between empyema and pneumococcus infection, and the general tendency in pure pneumococcic empyemata towards early and complete recovery under suitable treatment, as compared to the empyemata due to other or mixed infections, especially with staphylococci, or streptococci.

CASE I.—W. C., æt. 55, West Derby, under the care of Dr Judson.

Nov. 1893.—*History.*—The patient's son had been suffering from double basal pneumonia; the father was with him, attending to him for several days.

On the 22nd of November the patient walked home after leaving his son, and was taken suddenly ill with a rigor, and developed pleurisy of left side, with signs and symptoms of pneumonia, which did not break down by crisis, but lingered for some time, the temperature became hectic more or less, and signs of pleural effusion developed.

Dec. 20.—Dr Judson told me that the physical signs at one time resembled those of fluid, at another those of consolidation, as if the fluid had suddenly disappeared, and that this oscillation had been going on for many days. The patient at this date was sitting up in bed, with moderate dyspnœa, face slightly livid and very pale; the tongue was furred, T. 100·2° F., P. 100. He complained of sweating severely at times.

Examination of the chest revealed no want of symmetry in

the two sides, no alteration in cardiac dulness. Expansion feeble on the left side. Right side emphysematous. In front, on the left, the breath sounds were distant and somewhat tubular in character, and friction could be detected. In the axillary region the percussion resonance was impaired, vocal fremitus diminished, and the breath sounds very distant. At the back the lung was fairly clear above; from the spine of the scapula downwards there was dulness and resistance on percussion. Vocal fremitus was feeble. On auscultation, the vocal vibrations were markedly increased and of reed-like quality, with whispering pectoriloquy; the breath sounds were distinctly tubular. No crepitations were detected.

The physical signs led us to conclude that there was consolidated lung with thickened pleura, the result of previous effusion; however, an exploration with a trocar and canula was decided upon, and carried out just below the angle of the left scapula. There was a negative result, but on introducing a larger needle pus was discovered, aspiration was proceeded with, and over a pint of thick, creamy pus, quite sweet, was removed. On microscopic examination this was found to contain, as a pure infection, the *Diplococcus pneumoniae*. The patient was much relieved, and gradually improved.

On 18th January 1894, as there were evidences that the pus had re-collected, the question of opening and drainage was considered. As the previous pus contained a pure infection, it was decided to trust first to another aspiration, with the hope that the effusion might still remain pure. The fact that the patient's condition was better helped us also in our decision. About 3 vij. of sweet pus was removed. Pneumococci alone were found. No other operative interference was called for, as the pus did not re-accumulate, and by 12th March 1894 Dr Judson assures me that the chest was quite normal.

CASE II.—W. L., photographer, æt. 44, New Brighton.

The patient was first under the care of Dr Riddle of New Brighton, to whom I am indebted for the following notes:—

Sept. 8, 1897.—The patient was evidently suffering from grave respiratory trouble, with severe dyspnoea, T. 102·4° F., and double basal pneumonia. On 9th Sept. the temperature was the same, with very soft pulse of 120, and signs of probable effusion into the left pleural cavity. Sept. 10, general condition similar, but signs of effusion certain.

Sept. 11.—General condition worse, with slight rigors and T. 103·8° F. The L base was absolutely dull, the R. base not so dull. An exploring needle was introduced through the seventh intercostal space, and a syringeful of thin pus drawn off.

Sept. 13.—Admitted to Wallasey Cottage Hospital, and the following day, under chloroform, the pleural cavity was opened through the seventh interspace in the mid-axillary line (without previous exploration with needle). Firm adhesions of one inch in thickness required breaking down with the finger; no pus could be found. The needle was again used through the old track and eight other places, with variations in the position of the patient, but each time with a negative result. The incision was then closed with catgut, and events watched. The patient quickly rallied and improved daily in condition. The wound healed in ten days, and by this time the right pneumonia had quite resolved. An oscillating febrile condition remained, however, with troublesome cough. The expectoration was never purulent to any extent and scanty, never more than 2 oz. in twenty-four hours for some days. The left side gradually became more resonant, and distant breath sounds could be heard; the cough improved, and there was no pain.

Oct. 7.—Condition much improved, and temperature below 100° F. for ten days. Dr Riddle noted that there was evidence of previous pericarditis.

Nov. 9.—Until this date he had been gradually losing weight, there was moderate cough and very little expectoration, the temperature rose every evening, but not above 99° F., and he had had occasional night sweats.

Nov. 9.—On this date I first saw him at the hospital. His weight was 9 st., his face very pallid and pasty-looking.

On examination of the chest it was found that there was a want of symmetry on the two sides, the left having receded. Left side, expansion feeble; V. F. impaired all over, especially behind; P. R., impaired all over, but quite dull over an area 3 inches diameter at angle of scapula behind; V. R., diminished all over, and breath sounds very distant.

The cardiac dulness was not displaced, and there was loud scratching pleuro-pericardial friction, synchronous with heart-beat, extending from the heart's dulness right round the axillary region to the base behind. An examination with exploring needle over the dull patch at the back gave a negative result.

Nov. 16.—The friction was rapidly disappearing, but the dull area remained. Patient stated that he had commenced to expectorate more than usual; the material was first pink and evidently blood-stained, and later became pure pus with a sweet taste; he did not eject a large quantity at a time, but very frequently; some of this was obtained, and examined for tubercle bacilli, but none could be found. Pneumococci were present in large numbers.

Nov. 26.—Expectoration still profuse, consisting of pure pus, and containing pneumococci. A needle introduced at the angle of the scapula gave a negative result, but the feeling of penetrating thick adhesions.

Dec. 31.—He had gained 3 lbs., there was no night sweating, and the expectoration had quite ceased; he felt much stronger, and could walk a long distance without dyspnoea.

Jan. 25, 1898.—He was much improved; weight increased to 11 st. Temperature normal, pulse normal; no cough or expectoration. Left side, $15\frac{3}{4}$ inches; right, $16\frac{3}{4}$ inches at nipple. Expansion less on left side; in front P. R. clear all over, in axillary region impaired above sixth rib,

extending round to the back, fading into resonance above and below; V. F. impaired; V. R. impaired. Breath sounds much clearer, but still distant, with prolonged expiration. The cardiac sounds were to be heard loudly conducted over the area of impaired P. R., but there was no friction and no alteration of position.

Feb. 1.—The left side clearing up; P. R. clearer except over infra-spinous region. Breath sounds stronger; no adventitious sounds present. A faint thrill felt over praecordium, not particularly associated with heart-beat. Cough and expectoration have disappeared.

Feb. 25.—No cough; some slight pain on deep inspiration under left breast; lung quite cleared up; no pleuro-pericardial friction. Weight, 11 st. 5 lbs.

March 17.—Remains in good condition and steady in weight. No cough and no expectoration; left side, $15\frac{3}{4}$ inches; right, $16\frac{3}{4}$ inches. Left chest clear to percussion and auscultation; the breath sounds especially expiratory remain rather harsh at the left base. Cardiac dulness drawn over to the left.

Ap. 5.—Apex beat just outside nipple line, general condition still improving.

Points of Interest.

CASE I.—(a) Probability of infection from son.

(b) The oscillating character of the physical signs between those of consolidation and fluid.

(c) The absence of any displacement of the cardiac dulness, and that the later physical signs were rather those of consolidation than effusion.

(d) The presence of a pure infection of pneumococcus.

(e) The benign character of the empyema, resulting in—

(f) Complete recovery without incision and drainage.

The possibility that such a case might be mistaken for an unresolved pneumonia.

CASE II.—(a) The early consolidation, followed by effusion.

(b) The early deposition of thick layers of lymph, causing—

- (c) Localisation of the effusion.
- (d) The absence of any alteration in the position of cardiac dulness, probably due to pleuro-pericarditis, with thick layers of lymph.
- (e) The presence of a pure infection of pneumococcus.
- (f) The benign character of the empyema, resulting in—
- (g) Complete recovery by discharge through a bronchus without pneumothorax (Traube's necrotic method).

Laryngeal Vertigo. By J. MIDDLEMASS HUNT, M.B.

As laryngeal vertigo is a comparatively rare affection, if we are to judge by the small number of recorded cases, I shall begin by relating two which have come under my own notice.

The first case was that of a gentleman, aged 52, who consulted me in March, 1889, on account of hoarseness and cough of two months' duration. The patient was of florid complexion, and his general appearance suggested a rather free use of alcoholic stimulants, which he admitted on inquiry.

On examination he showed a well-marked hypertrophic pharyngitis, with elongated uvula. His larynx was congested as a whole, and the inter-arytenoid mucous membrane thickened.

By way of treatment I proceeded to brush the larynx with a solution of chloride of zinc, 15 grains to the ounce. Immediately I introduced the brush within the larynx the patient fell forward unconscious, and before I could catch him, struck his head against the corner of my desk. As he fell I observed a distinct convulsive movement of the facial muscles. He recovered consciousness almost at once, and said he felt quite well, except that he had some pain from the bruise on his forehead. He then told me that some years previously he had had a similar attack on having his throat brushed by the late Mr Rhinallt Pughe.

In the second case I did not witness the attack, and I give the facts as reported by the patient and his wife.

J. R., æt. 48, consulted me, in November of last year, on

account of tickling in his throat, with severe spasmoid cough, which had troubled him for over a year. On two occasions within the preceding three months, after a slight fit of coughing, in which his face became purple, he fell on the floor insensible. He recovered consciousness in a few seconds, but dimness of vision remained for a short time afterwards.

Locally he showed a slight chronic pharyngitis and laryngitis, with greatly elongated uvula. He had no bronchitis, was extremely temperate in his habits, and seemed a healthy man.

These two cases are fairly typical of some fifty or sixty which have been recorded in the last twenty years under the name of 'laryngeal vertigo.' This name was given by Charcot, who, in 1876, first described the affection. The name was an unfortunate one, as it is not vertigo but loss of consciousness which is the most striking feature in these cases, whereas loss of consciousness is extremely rare in ordinary vertigo.

It is evident, in reading the clinical records of laryngeal vertigo, that the cases differ widely, both etiologically and pathologically. In some the coughing is violent and prolonged, ending in cyanosis; in others the cough is very slight, or may be entirely absent, only a pricking or tickling in the larynx preceding the loss of consciousness. In a few there is marked pallor of the face. In nearly all the loss of consciousness is complete, in a very few only giddiness with some mental confusion occurs. Biting of the tongue is mentioned in a small number of cases, and convulsive movements of the face and limbs have been observed in many. A very curious fact is that with one exception all cases have occurred in men between the ages of 35 and 70. After the attack the return to complete consciousness is almost immediate, though loss of memory was complained of in a few instances.

The frequency of these attacks varies greatly, some patients never having more than one, while others have had as many as fifteen in one day.

The local lesions observed have been very slight as a rule, such as granular pharyngitis, elongated uvula, chronic laryngitis, a laryngeal polyp in one case, and in many chronic bronchitis. A considerable number of the cases have occurred in persons addicted to a rather free use of stimulants.

Various explanations have been offered of these attacks. Charcot regarded the affection as analogous to aural vertigo, the superior laryngeal being the afferent nerve, which, by a peculiar form of irritation, brings about disturbances in the higher centres, resulting in cough, vertigo, and loss of consciousness. Later French writers have modified this view as regards the cause of the loss of consciousness, tracing it to irritation of the inhibitory cardiac centre causing arrest of the heart's action, and thereby producing cerebral anaemia.

Another theory, advanced by M'Bride, is that all the symptoms are due to a complete glottic spasm occurring during a fit of coughing. As a result "the whole expiratory effort is felt through the air contained in the lungs by the alveoli, the larger blood-vessels in the thoracic cavity, and the heart itself." Syncope is thus produced, and almost at the same moment the spasm of the glottis relaxes and the attack is over.

A third view is that laryngeal vertigo is really epilepsy with a laryngeal aura.

Probably each of these explanations is true for certain cases, the term laryngeal vertigo having been employed to cover a group of symptoms which may originate in more than one way. In some the circulatory disturbance is the chief feature, in others the nervous element is most prominent.

I think that all cases of laryngeal vertigo may be classified as follows:—(1) Cases following violent paroxysmal cough, with more or less complete glottic spasm and great cerebral congestion, such as are sometimes observed in whooping-cough. (2) Cases of true epilepsy. (3) Cases of laryngeal vertigo proper, better named 'ictus laryngis,' in which laryngeal irritation, with little or no cough and no glottic spasm, is followed at once by giddiness and loss of consciousness, complete re-

covery following in a few seconds. I believe that the first of my cases was an example of this form.

In Charcot's original paper he indicated the possibility of these cases sometimes terminating fatally. Exactly twenty years later, Schadewaldt, of Berlin, related the first fatal case, in which the patient, after a slight cough, fell down unconscious and at once expired.

DR P. DAVIDSON showed a series of lantern slides, photographs of patients who had been under his care in the Infirmary for Children, to illustrate rickets, tetany, various spasmodic paralyses, cerebral paralyses, congenital syphilis, and congenital deformities. A running commentary was made on points shown in the photographs.

The Treatment of Deserted Infants, and its Results. By WILLIAM ALEXANDER, M.D., F.R.C.S., Surgeon to the Royal Southern and Workhouse Hospitals, Liverpool.

FOR many years I have had under my care at the Liverpool Workhouse Hospital, a department where infants are admitted who have no mothers, either by reason of sickness or death; or worse than no mothers,—that is, when the mothers have deserted them, or have been temporarily taken from them by drink, debauchery, or crime.

This department is called the Children's Surgical Division, and contains all motherless infants up to 2 years of age, healthy or diseased, and all diseased girls up to 10 or 12 years of age. No cases of contagious disease are, of course, admitted.

The general surgical diseases treated in this department do not now concern us. The subject I wish to bring before the meeting to-night is the management of the infants,—a subject that has exercised my mind a good deal, and given me a considerable amount of anxiety at different times.

In the term 'infant' I include all admissions under 2



FIG. 1.—On admission.



FIG. 2.—Two months after.

years of age, and the number of these admitted during 1896 was 150, and during 1897, 214. From this it will appear that the management of this department is a serious business, and would entail an enormous amount of care and skill on the medical and nursing staff were the babies all healthy and strong, with good digestive and normal absorptive powers. But you will presently see that hardly any of these infants are quite healthy when admitted,—in fact, that the great majority are very unhealthy, either through hereditary taint, or more

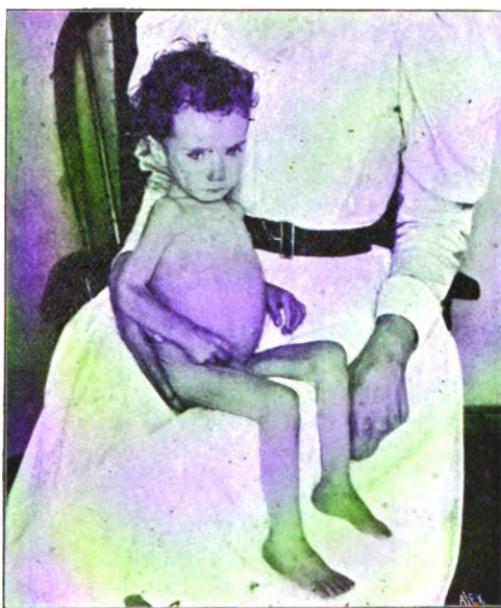


FIG. 3.—Neglected child.

frequently, through acquired disease, and that the mortality is certain to be great, no matter what pains are taken. I have now seen a long succession of resident medical officers, lady superintendents, and charge nurses, who have all devoted themselves to the care of these babies, and whose most zealous and skilful efforts never met with commensurate success. A plump, healthy child, the pride of the ward, would suddenly die from convulsions, and uncontrollable diarrhoea or sickness would

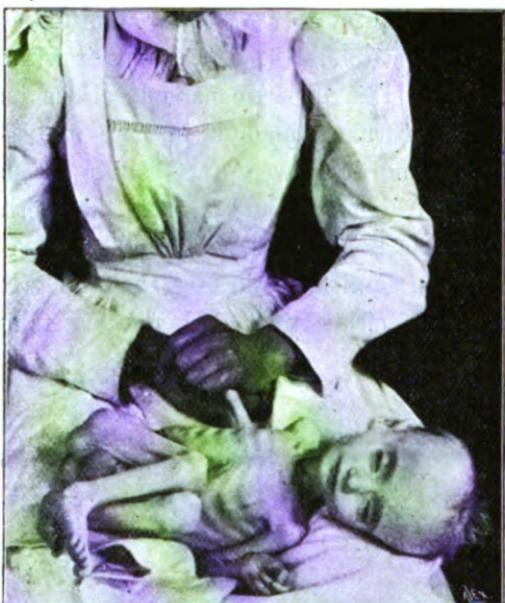


FIG. 4.—Age 11 months; 9½ lbs.

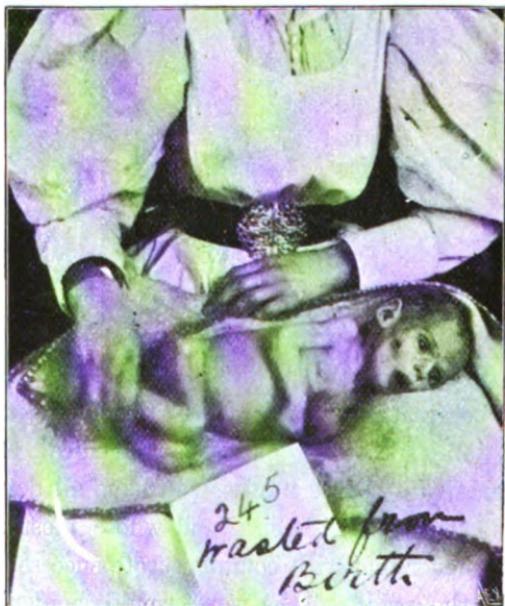


FIG. 5.—Wasted from birth.

carry off in a few days a little one whose condition had been improving slowly for months, as the result of assiduous care. No means are denied to us by the hospital authorities, and all sorts of 'food' are obtained as soon as ordered. Sometimes in the past one food would be the favourite and sometimes another. Each seemed to fail in turn, and still another would be substituted, and would become fashionable, to be displaced in its turn by a third, etc. A feeling of despair, or at any



Fig. 6.— $8\frac{1}{2}$ lbs.

rate of frequent discomfiture, attended the efforts put forth, and both resident medical officers and nurses were glad to be relieved of work in the children's surgical.

In talking about the care of these infants with different authorities and philanthropic people of both sexes concerned in hospital work, I was astonished to find that the want of success in the breeding of these children did not cause people generally much concern, and that the great mortality was a matter for a kind of quiet, resigned congratulation. The resig-

nation was due to several different reasons—social, physical, and moral. “The death of the pauper-tainted children was a blessing,” said one; “The children are all full of transmitted disease, and hence your efforts are in vain,” said another; whilst a third raised her eyes to heaven and “thanked God that the poor things were taken from the evil to come. Had they lived, their moral and hereditary tendencies would have effectually

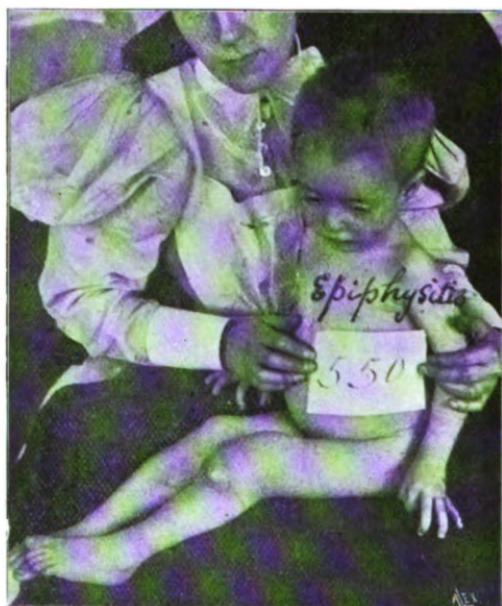


FIG. 7.—Epiphysitis.

excluded them from that blessed abode in which they were now safe.”

Although their intellects and consciences were accusing the medical and nursing staff of failure where they often thought they should have succeeded, it was evident that they need not fear external reprobation for the want of success. Indeed, what fuss we did make was looked upon indulgently, just as we look upon simple people who are, metaphorically, knocking their heads against stone walls, and who are crying out because the walls are harder than their heads. In spite, however, of these

opinions, we felt that the pauper-taint and eternal damnation are not medical questions, although they are respectively the worst things that can happen to anyone in this world and in the next. Hereditary and congenital diseases are directly important from a medical point of view, but these we had looked for carefully by post-mortem examinations and all other means at our disposal, and we could not find any evidence of transmitted taint in more than one-fourth of the children. In the rest, the diseases found were due either to climatic or dietetic



FIG. 8.—Cancrum oris.

causes, and were preventable diseases. Hence we arrived at the conclusion that something could be done by a systematic study of these infants; and it is a preliminary report of this study, extending over two years, that I wish to bring before you this evening.

In the first place, most of the infants were photographed soon after admission, and you see before you samples of the kind of babies admitted. We will only show you types, but

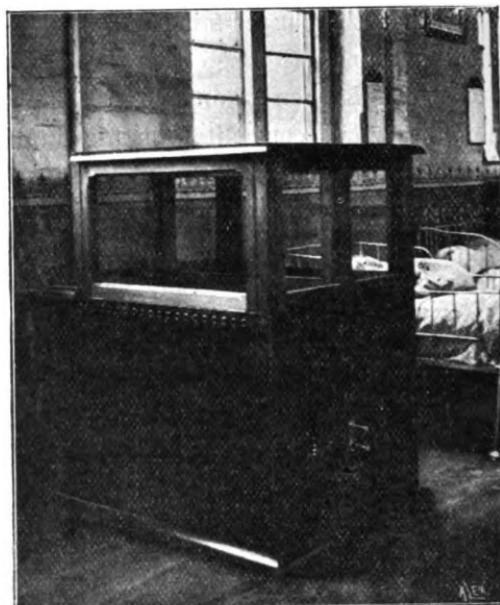


FIG. 9.

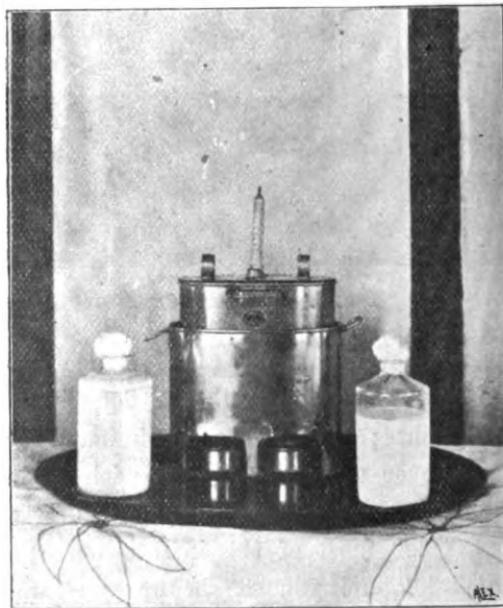


FIG. 10.

we can tell you the number belonging to each type, and thence you will be able to judge of the condition of the infants admitted for yourselves.

We have analysed 265 of these cases, dividing them into four classes:—

1. Healthy babies, plump and well nourished. Of these there were 42, and seven samples are now thrown on the screen.

2. Thin, lank, ill-nourished babies, with slight catarrhs, gastro-enteritis, etc., but without any distinct disease. There are 171 cases in this class, and we will show you eight examples. (Three are here printed.)

3. Patients reduced to the last extremity of misery and emaciation. Of this class we have 21 cases, of which eight examples are shown. (Three are here printed.)

4. Diseased children account for 31 cases where distinct disease was present. Of these we will show 26 cases. (Two are here printed.)

The remaining three slides represent the instruments used in the treatment of these children, viz., the incubator and the steriliser.

Mortality.—The mortality among these infants is, as you may suppose from the photographs, very large. In 1896, out of 150 infants, 57 died, or a mortality of 38 per cent. In 1897, out of 214 infants admitted, 69 died, or a mortality of 32·2; so that during 1897 we are credited with a saving of life of 6 per cent. beyond what we were able to save in 1896.

During 1897 this department was under the care of Dr Allen, who not only devoted great care to the management of the children, but kept the records in good order. To him, aided zealously by the lady superintendent and nurses, the greatest credit is due for the improved health of the little ones. From these records I am able to draw up the following tables:—

*Causes of 69 Deaths of Infants during 1897.**Mortality 32·2 per cent.*

Causes of Death.	No. of Cases.	No. of Post-mortems.
Diarrhœa,	9	0
Marasmus,	7	0
Tuberculous enteritis,	6	6
Phthisis,	4	3
Enteritis and gastro-enteritis,	6	3
Convulsions,	2	0
Wasting,	4	1
Typhoid,	3	3
Bronchitis,	4	1
Gastro-intestinal haemorrhage,	1	1
Broncho-pneumonia,	5	0
Cellulitis of neck,	1	0
Pneumonia,	2	1
Congested brain and ileum,	2	2
Boils and general debility,	2	1
Congenital syphilis,	3	0
Pyæmia and boils of scalp,	2	0
Cardiac dropsy,	1	0
Cancrum oris,	1	0
Tuberculous meningitis,	1	0
Inanition, seven months child,	1	0
Weaning,	1	0
General tuberculosis,	1	0
<hr/>		<hr/>
Totals,	69	22

*Causes of 57 Deaths of Infants during 1896.
Mortality 38 per cent.*

Causes of Death.	No. of Cases.	Causes of Death.	No of Cases.
Diarrhoea, . . .	8	Brought forward, . .	35
Marasmus, . . .	10	Cellulitis of neck, . .	1
Tuberculous enteritis,	1	Pneumonia, . . .	3
Phthisis, . . .	0	Congenital syphilis, . .	3
Enteritis, . . .	7	Tuberculous meningitis,	1
Convulsions, . . .	2	Inanition,	8
Tabes,	0	Weaning,	1
Wasting, . . .	1	Dentition,	3
Typhoid, . . .	0	Hydrocephalus, . . .	1
Bronchitis, . . .	6	Croup,	1
Broncho-pneumonia, . .	0		
	—		—
	35		57

The post-mortems obtained in these cases were not recorded regularly, so that they are not available for tabulation.

The Weights of Children at Different Ages in Pounds and Fractions of a Pound. Where the child died, the weights are in black figures.

One week old.— $5\frac{3}{4}$, $5\frac{1}{2}$.

Two weeks old.— $7\frac{1}{2}$, 7, 6, $4\frac{1}{2}$.

Three weeks old.—15.

Four weeks old.— $7\frac{3}{4}$, 10, $7\frac{1}{2}$, $8\frac{1}{2}$.

Under two months old.— $9\frac{1}{4}$, $13\frac{1}{2}$, $7\frac{1}{2}$, $16\frac{3}{4}$, 12, $6\frac{3}{4}$, 7.

Under three months old.—7, $6\frac{3}{4}$, 6, $6\frac{1}{4}$, $8\frac{1}{2}$, $5\frac{1}{2}$, $7\frac{1}{4}$, $7\frac{1}{2}$, $8\frac{3}{4}$.

Under four months old.— $7\frac{3}{4}$, 14, $5\frac{1}{4}$, $10\frac{1}{4}$, 12, $9\frac{1}{2}$, $7\frac{1}{2}$, 7, $6\frac{1}{2}$.

Under five months old.—7, 11, $10\frac{3}{4}$.

Under six months old.—10, 10, 10, 9, 12, $10\frac{1}{4}$, $6\frac{3}{4}$.

Under seven months old.—13, $12\frac{1}{4}$, $12\frac{1}{4}$, $11\frac{1}{2}$, 13, $7\frac{1}{4}$.

Under eight months old.—8, 19, $9\frac{1}{4}$, 16, $16\frac{1}{2}$, $9\frac{1}{2}$.

Under nine months old.— $18, 12\frac{1}{2}, 16\frac{3}{4}, 9\frac{1}{2}, 18, 8\frac{1}{2}, 16\frac{3}{4}, 13, 17\frac{1}{4}$.

Under ten months old.— $16\frac{1}{2}, 10\frac{1}{2}, 17, 14, 13\frac{1}{2}, 18\frac{3}{4}, 8\frac{1}{2}, 16$.

Under eleven months old.— $19, 19, 19, 16\frac{1}{2}, 11, 11, 9\frac{1}{2}, 14\frac{1}{2}$.

Under twelve months old.— $13, 19, 19, 7\frac{1}{2}, 16, 19, 16, 15, 12, 14\frac{3}{4}, 11, 12, 18\frac{1}{2}, 17, 12\frac{1}{2}, 10\frac{1}{2}, 13, 11\frac{1}{4}, 12\frac{1}{4}, 18, 15, 13\frac{1}{4}, 12\frac{1}{4}, 21\frac{1}{4}, 16\frac{1}{2}$.

Under thirteen months old.— $14\frac{1}{2}, 13\frac{1}{4}, 19\frac{1}{4}, 12\frac{1}{4}, 20\frac{3}{4}$.

Under fourteen months old.— $16\frac{1}{2}, 16, 15, 14, 15, 13\frac{1}{2}, 12, 15, 15\frac{1}{4}, 12, 14\frac{3}{4}, 13\frac{3}{4}$.

Under fifteen months old.— $12\frac{1}{4}, 17\frac{1}{2}, 15, 15\frac{1}{2}, 15\frac{1}{2}, 8\frac{1}{2}, 13\frac{1}{2}, 15, 14, 16, 12\frac{1}{4}, 16\frac{1}{2}, 17\frac{1}{2}$.

Under sixteen months old.— $16, 16, 10\frac{1}{2}, 12, 12, 16\frac{1}{2}, 21$.

Under seventeen months old.— $14, 18, 17\frac{1}{2}, 12$.

Under eighteen months old.— $15, 18, 28, 16, 17, 17\frac{1}{2}, 15\frac{1}{4}, 17, 16, 11, 17\frac{3}{4}, 17, 17, 18, 14, 17, 12\frac{1}{4}, 18\frac{1}{2}, 16\frac{1}{4}$.

Under nineteen months old.— $15\frac{1}{2}, 18\frac{1}{2}, 15\frac{1}{2}, 11$.

Under twenty months old.— $17\frac{1}{2}, 16\frac{1}{2}, 16\frac{1}{2}, 12\frac{1}{4}$.

Under twenty-one months old.— $23, 11, 19, 15\frac{1}{2}, 10, 13$.

Under twenty-four months old.— $19, 19, 21, 13\frac{1}{2}, 22, 10, 11\frac{1}{2}, 11\frac{1}{2}, 15\frac{1}{2}, 18, 15, 21, 13\frac{3}{4}, 14\frac{3}{4}$.

Weight in Pounds and Fractions of a Pound at Different Ages during 1896. Where the child died, the weights are in black figures.

One week old.— $5\frac{1}{6}, 4, 4\frac{1}{2}, 7$.

Two weeks old.— $2\frac{1}{2}, 3\frac{3}{4}, 6\frac{1}{2}, 6\frac{1}{2}, 8\frac{1}{4}$.

Three weeks old.— $7\frac{1}{2}, 6\frac{1}{2}, 7\frac{1}{2}$.

Four weeks old.— $10\frac{1}{2}, 10$.

Under two months old.— $6\frac{1}{2}, 6\frac{1}{2}, 9, 10, 10, 6, 8\frac{1}{2}, 3\frac{1}{2}, 7, 7\frac{1}{2}, 6\frac{1}{2}$.

Under three months old.— $8\frac{1}{2}, 8\frac{1}{2}, 8, 9\frac{1}{4}, 9\frac{1}{4}, 6\frac{1}{4}, 7$.

Under four months old.— $10\frac{1}{2}, 13\frac{1}{2}, 8, 6\frac{3}{4}, 16\frac{1}{4}, 10\frac{3}{4}, 7\frac{1}{4}, 7\frac{1}{2}, 10\frac{1}{2}, 10$.

Under five months old.— $12\frac{1}{2}, 12, 7\frac{1}{2}, 11, 9\frac{3}{4}$.

Under six months old.— $10\frac{1}{2}$.

Under seven months old.— $13\frac{1}{2}$, 16, $14\frac{1}{4}$.

Under eight months old.—8, $15\frac{1}{2}$, 11, $16\frac{1}{4}$, $18\frac{1}{2}$.

Under nine months old.— $15\frac{1}{2}$, $16\frac{1}{4}$.

Under ten months old.—15, $14\frac{1}{4}$, $14\frac{1}{2}$, 15, 14.

Under eleven months old.—9, $14\frac{1}{2}$, $15\frac{1}{2}$, 14, $9\frac{1}{4}$, 15, $6\frac{1}{4}$, 13, $16\frac{1}{2}$.

Under twelve months old.—21, 15, 13, $12\frac{1}{2}$, $18\frac{1}{2}$, $15\frac{1}{4}$, 12, 13, 16, $10\frac{1}{4}$.

Under thirteen months old.— $12\frac{1}{2}$, 14, 12, $16\frac{1}{2}$, 15.

Under fourteen months old.— $14\frac{1}{2}$, 15, $21\frac{1}{2}$, 8, 14, 21, $12\frac{1}{2}$, 14, 14, $18\frac{1}{2}$.

Under fifteen months old.— $16\frac{1}{2}$, 28, $12\frac{1}{4}$, $15\frac{1}{4}$, $16\frac{1}{4}$, 14.

Under sixteen months old.— $10\frac{1}{4}$.

Under seventeen months old.—15, 15, 18.

Under eighteen months old.— $10\frac{1}{4}$, $16\frac{1}{2}$, $20\frac{1}{2}$, $15\frac{1}{4}$, 15.

Under nineteen months old.—14, $14\frac{1}{4}$, $17\frac{1}{2}$.

Under twenty months old.—14.

Under twenty-one months old.— $14\frac{3}{4}$.

Under twenty-two months old.—12.

Under twenty-three months old.— $18\frac{1}{2}$.

Under twenty-four months old.—16, $21\frac{1}{2}$, 11, 14, 11, 14, $19\frac{1}{2}$, 15, $14\frac{1}{2}$, $18\frac{1}{2}$.

Gain or Loss of Weight of Children while in Hospital, and the Rate of Increase or Decrease.

Out of 139 children weighed the second time, and both weights recorded, we find that 75 gained in weight, 57 remained stationary, and 7 lost weight. The following fractions indicate the number of gain: the numerator, the number of days between the weighings; and the denominators, the weight in pounds and fractions of pounds gained:—

3	5	7	8	9	9	9	9	10
$\frac{1}{4}$	$\frac{1}{4}$	1	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$

10	10	10	11	11	11	11	11	11
—	—	—	—	—	—	—	—	—
$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{8}$
13	13	14	14	14	14	15	15	16
—	—	—	—	—	—	—	—	—
$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$1\frac{1}{4}$	$\frac{1}{4}$	$1\frac{1}{2}$
17	17	17	17	17	17	18	19	19
—	—	—	—	—	—	—	—	—
$1\frac{1}{4}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{4}$	$2\frac{1}{2}$	$\frac{1}{4}$
20	20	21	21	21	21	21	23	25
—	—	—	—	—	—	—	—	—
$1\frac{1}{2}$	$\frac{3}{4}$	1	$2\frac{1}{2}$	$\frac{1}{2}$	2	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$
25	25	26	26	26	37	29	30	31
—	—	—	—	—	—	—	—	—
$\frac{1}{2}$	$1\frac{1}{4}$	1	$1\frac{1}{2}$	1	$2\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{4}$	$1\frac{1}{4}$
32	33	33	36	37	37	37	38	42
—	—	—	—	—	—	—	—	—
$1\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	1	2	$2\frac{1}{2}$	$\frac{3}{4}$	$1\frac{1}{4}$
45	47	48	55	56	91	91	92	—
—	—	—	—	—	—	—	—	—
$1\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$2\frac{1}{4}$	$1\frac{1}{2}$	$3\frac{1}{2}$	$1\frac{1}{2}$	—

The times that the weights remained stationary are remarkable—45 remained stationary for a fortnight, and the remaining 12 remained stationary in weight from sixteen to twenty-nine days.

Those who lost weight were only 7 in number. The rate of loss and amount is given in fractional form, in the same way as the increase of weight, in the following fractions:—

4	8	12	17	21	23	28
—	—	—	—	—	—	—
$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{1}{4}$

A very important question in the treatment of these delicate children is, how they are to be surrounded by the best hygienic conditions? We have shown you the incubator, and there is a great amount of talk about the incubator in lay papers. We may say at once that we do not look upon the incubator as a

very important or frequently useful apparatus. The first one shown did not obtain sufficient ventilation, and some kittens reared in it did not thrive. We have altered it, and think it is now safe, and we may use it occasionally, but probably only in a very few cases. A better method of preserving the vital heat of these babies is to have the ward temperature constantly maintained between 70 and 80 degrees. The ventilation is secured without draughts, and the number of little babies in one ward is strictly limited in number. In a warm, clean ward an incubator is unnecessary—except, perhaps, in the case of some premature children; and except in a warm room or ward an incubator is dangerous. The little creature has to be taken out of the incubator frequently for various purposes; and unless the room is kept warm, the frequent changes of temperature to which the child is thus exposed cannot but neutralise the benefit obtained.

We have found again and again that whenever the number in our baby ward went up beyond ten or twelve cases, that the babies began to fail, although the other conditions were apparently the same. They seem to poison each other, notwithstanding that the cubic space would be quite sufficient for the same number of adults.

Under such overcrowding, we sometimes find a fairly plump baby in a single night become shrivelled, showing sunken eyes, drawn-in cheeks, and utter prostration. There would be no febrile condition, but rather abnormally low temperatures and collapse of all the vital actions of the body. On post-mortem examination, we would see small congested spots at various parts of the gastro-intestinal tract; partially collapsed or slightly congested lungs would be found, but nothing distinctive. Bacteriology has not hitherto been able to help us in the matter.

The nursing of these babies is a matter of paramount importance, and the nurses selected should have an instinct for children, and be well trained. Every medical man must have observed how some women intuitively know the baby language, and can feed a child successfully on any healthy food, regulat-

ing the quantity, the frequency of meals, etc., with great precision. Other women know nothing about this; and a delicate baby in their hands, with the very best intentions on their part, and no lack of zeal, is sure to come to grief. The charge nurse in this department is always selected with great care, and we have had a succession of such nurses who have performed their duties in a most excellent way. She trains probationers, who nurse and feed the babies under her direction. This is a weak point, in that the staff is an ever-changing one, varies in experience, and is sometimes overworked. There is a danger, of course, that experience is occasionally gained, perhaps, at the expense of some baby, and that overwork is perilous to all the babies. With the new Nurses' Home, now nearly complete, we hope to have a larger staff for this department. Babies don't thrive on food alone. They require affection, either natural or artificial, amusement, exercise; and we do not think a nurse can properly and successfully manage more than two or three babies. Sometimes, alas! she has many more, for the little ones come to us in swarms, just as they sometimes go out in swarms. In order to simplify the nursing as much as possible, we have arranged the food so that it may be prepared and administered by a novice, without great intellectual or manipulative skill on her part. At one time, as has been said before, we ran through the whole gamut of infant food, and tried many abominations that are sold under that name. These artificial foods vary in quality, are sometimes changed by keeping, come to grief in cooking, and differ much in acceptability with the babies, so that when anything went wrong, the possible explanations were so many that the truth could not generally be ascertained.

We therefore came back to the *cow*; and the food that has agreed well with infants for the past year and a half has been sterilised milk, heated up to 155 degrees, and then allowed to cool. The bottles are then closed with cotton-wool until the milk is required for use; and the milk is either reheated by replacing the bottle in the steriliser, or is warmed by the addi-

tion of boiled water. Some sugar is added to make the taste sufficiently sweet; but water is seldom added, except where such addition seems desirable. For instance, in fifty-seven successive children admitted, thirty-five took the milk pure, ten had the milk diluted with an equal part of water, ten with two parts of water, and two with three parts of water. The delicacy of stomach guides the dilution more than the age of the babies, very young babies taking the undiluted milk with success.

When the infants become older, or their stomachs become restored to health, they are fed on bread and milk, farinaceous milk-pudding, but all patented foods are abolished, with one exception, so that we know what we are doing. Vomiting and diarrhoea are now rare complications; and we feel that, though we cannot save as many of the wretched children who come to us as we would like, we have the satisfaction that we do not accelerate their demise by the food given, and that the method of feeding is so simple that mistakes cannot be readily made in carrying it out.

Many of these babies belong to the 'ins and outs,' and among these the labours of a month are often destroyed in a day by the wretched mothers taking their babies out, and upsetting their stomach, lungs, or some other part of their system through ignorance, carelessness, or selfishness. The liberty of the subject is a precious inheritance, but here it degenerates into a licence, with terrible consequences to the offspring of the submerged tenth.

THIRTEENTH ORDINARY MEETING, HELD 31ST MARCH 1898.

Removal of the Crystalline Lens in High Myopia. Spontaneous Cure of Divergent Strabismus. By EDGAR STEVENSON, M.D., Assistant Surgeon, Liverpool Eye and Ear Infirmary.

THE operation of removal of the lens in cases of high myopia by needling, and the subsequent absorption or evacuation of the

broken-up and opaque masses of lens substance, has, since its introduction by Fukala some ten years ago, more than justified its claim to be considered the most important onward step in ophthalmic surgery that has been taken for many years. Myopia, fortunately, is not so common in this country as on the continent, but it has markedly increased under the pressure of education, and instances of myopia of over 10 dioptres of refractive error are being more and more constantly seen. It is therefore of the greatest importance that the advantages of this simple and most beneficial operation should be more widely known.

I do not here propose to describe the conditions under which the operation may be performed, as my main object is to draw attention to some interesting peculiarities in a case which is, I think, a good example of the benefit to be derived from it; but as to the degree of myopia at which the operation is desirable, in children anything over 10 dioptres, and in adults over 15 dioptres, may be taken, other things being favourable, as justifying surgical interference.

The case to which I refer was shown by me at the Medical Institution on 31st March, and is briefly as follows:—

M. R., aged 15, first attended at the Liverpool Eye and Ear Infirmary in September 1896. She had been shortsighted all her life, and since the age of 5 had developed a very marked concomitant divergent squint in the right eye. Her vision and refraction were as under:—

— 20
v. Rt. $\frac{1}{2}$ c full correction $\frac{1}{4}$ reads Jä 1. at 3" $\oplus - 17$
Lt. $\frac{1}{2}$ c full correction $\frac{1}{4}$ reads Jä 1. at 4" $\oplus - 12$
— 16

There was no organic change in either fundus. I advised her to have the right eye, which, though squinting, was not amblyopic, operated upon, at the same time telling her that if her sight improved in that eye the squint might disappear, but would occur on the other side, and need another operation. The right lens was accordingly needled in October 1896, and this one operation was sufficient to thoroughly break up the

lens, which dissolved without any increase of tension or iritis, and three months afterwards there were only some bands of capsule stretching across the pupil; these were needled twice, and the eye now looks, to outward inspection, quite normal, except for some tremulousness of the iris.

The vision, after the capsule was needled, began steadily to improve; and as the patient found that it was already better than the right eye, she began to use it for distant vision. The eye then began to come straight, but without any corresponding outward deviation of the left eye, which had now become practically useless. I must confess that this was a most pleasant surprise both to the patient and her friends and to myself, and I cannot here offer any explanation of the nervous mechanism which was then and is still retaining the parallelism of the two eyes; but I do not recollect having heard of any similar case being reported.

The improvement in vision was as marked as that in her personal appearance. Without any glass it improved from $\frac{6}{0}$ to $\frac{6}{18}$ and with $+3^d + 1^d$ cyla $+ 45^\circ = \frac{6}{9_{(4)}}$. With $+7$ she reads Jä 1. with ease.

The left eye has since been needled, and the pupil is not yet clear. It has required three very free applications of the needle to break up this lens, which shows a marked difference in solubility as compared with the right. This difference in solubility of lenses has probably been noticed by every ophthalmic surgeon, and is certainly not due to want of similarity in operating on the two eyes.

The dangers of this operation have, in my opinion, been much exaggerated; but results are quite likely to be disappointing if the eye is in an unhealthy state from disease of the choroid or vitreous. Neither my colleagues at the Eye Infirmary nor myself have as yet had any experience of the dire results, such as the various forms of iritis, cyclitis, or detachment of retina, so frequently mentioned by continental surgeons; and this immunity I attribute mainly to the fact that if an eye

were to show signs of extensive disease, especially of the choroid, even if the vision were fairly good, it would probably not be operated upon. Increase of tension from the swollen lens is rather a favourable accident than otherwise, as it justifies opening the anterior chamber and speedy evacuation of the lens substance,—a proceeding which, in my opinion, is distinctly *not* justifiable except under that condition.

This case is also a good illustration of the difference in the refraction caused by removal of the lens in a highly myopic eye. In hypermetropia the difference is always about 10 or 11 dioptres, but here the difference is seen to be over 20 dioptres.

MR THURSTAN HOLLAND related the notes of a case where a penny had been lodged in the œsophagus of a boy 12 years of age, for three months, producing no symptoms. A radiograph was taken, showing the penny behind the upper part of the sternum; it was then easily removed with an ordinary coin-catcher. He also showed a series of radiographs taken with short exposures. These were taken with 6- and 10-inch spark coils, and the exposures for the various parts varied from 15 to 60 seconds.

Framboesia, or 'Yaws.' By GEORGE G. HAMILTON, M.B.,
F.R.C.S. Eng. and Ed.

MR PRESIDENT AND GENTLEMEN,—So rare in this country is the disease known as framboesia, or 'yaws,' that before relating and showing you the case I bring before you to-night, a short synopsis of the main features of the disease will, I feel sure, be acceptable to most of you. Framboesia is generally supposed to be peculiar to the African race, and for the most part it is in Africa or the West Indies that the disease is found. Several cases in white men have, however, been reported from the West Indies. I am not aware of any case being reported in this country besides the one I show you to-night.

General characters of Frambæsia.—In from three to ten weeks (often longer) after inoculation or exposure to the contagion, yellow or reddish-yellow tubercles appear on the skin of the face, neck, limbs, feet, genital organs, mouth, nostrils, or arms. There is some constitutional disturbance, but no marked debility. Some of these tubercles form a moist, fungus-like fleshy growth, resembling a raspberry, very persistent, and exuding a thin watery discharge; others disappear without forming such growth.

The gentleman whose case I relate is an English surgeon, who, ten months ago, while operating on a negro near Zanzibar, had the point of a hypodermic syringe deeply driven into his finger. The negro was a native of Zanzibar, was suffering from 'yaws,' and cocaine was being injected around a fungating tubercle on his foot, when the above accident happened.

An acute tendo-synovitis of the finger resulted within twelve hours, but this subsided under treatment, leaving some stiffness of the finger; and although he naturally kept himself under careful observation, there was no further development for two months.

At the end of two months three tubercles appeared close to the site of the syringe puncture. These tubercles were raised, covered with a tough, brownish scab, which on removal left a grey *anæsthetic* surface; they were treated, and got well in a fortnight. About this time severe, deep-seated rheumatic pains developed, referred to both shoulder-joints. Five months after the original inoculation the skin of the left heel became apparently blistered, but on cutting away some dead skin on the surface a fleshy tubercle, the size of a sixpence, and separated from the surrounding tissues by a distinct fossa or sulcus, was discovered. This fungated, and remained unhealed for three months. Soon others appeared, making in all about a dozen. Three or four at the same time appeared on the right foot. There was little pain except when the foot was much used, and the ulcer did not smart when rubbed over with bluestone:

The discharge at first resembled Camembert cheese in colour and consistence, but afterwards became thinner as the fungating mass came above the skin surface. All have now healed except one, which presents a fairly typical appearance.

The general health did not suffer in any way, the appetite was good, and there was no loss of weight.

Accompanying these manifestations there have been scattered patches of a scaly eruption occurring on the extensor as well as the flexor aspects of both hands, the lower part of the chest, and over the left olecranon. On the forehead a slight eruption of minute papules, resembling a folliculitis, has been noticed recently.

The treatment attended with most success has been prolonged soaking in 1 in 30 hot carbolic acid. Mercury internally has apparently not had much effect.

A culture was sent to Professor Hamilton of Aberdeen, and he reports as follows:—"An extraordinary bacillus, which shows well-marked sporulation even at the end of forty-eight hours. On agar the growth looks very peculiar, quite different from that of any suppurative organism I know. Guinea-pigs have been inoculated, but with negative results so far."

In conclusion, it has long been held that framboesia is only *syphilis* altered by racial, geographical, or other influence, but recent researches all tend to prove that this is not the case. The following are the chief points of difference:—

- (1) *Localisation.*
- (2) *Auto-infection* (the injection of 'yaw' crust in a solution of glycerine produces typical fungating tubercles).
- (3) *The two diseases are found in the same individual.*
- (4) *The possibility of inoculating patients with typical framboesia, both by secretion and blood.*
- (5) *Incubation in framboesia longer than in syphilis.*
- (6) *Anæsthetic character of tubercles.*
- (7) *Precursive scaly rashes.*
- (8) *Bacilli found in framboesia in epidermis, corion, submucosa, and capillaries (alum carmine and Weigert's method).*

(9) *No scarring after lesion has healed.*
(10) *No induration in original ulcer in framboesia.*

Dr FRANK H. BARENDE alluded to the difficulties of diagnosis in this affection, and was of the opinion that although there was ample ground for admitting yaws as a morbid entity, there were many cases wrongly called yaws, and which turned out to be examples of tertiary fungating syphilides. In any case the pathology of framboesia brought it into the same category of infective granulomata, which in the great majority of cases were due to micro-organisms. It would be interesting to know whether any observer had satisfied Koch's postulates, and produced the bacillus that was the *causa causans* of the affection. So far he (the speaker) had not heard of absolute proof being forthcoming, although the contagiousness of yaws was confirmed by the history of the present case.

Dr S. G. MOORE referred to a case seen by him some years ago in West Africa in the person of a negro. The eruption was widely distributed, and the bright strawberry-red of the individual ulcerations, surrounded by a whitish zone where the edge of the healthy skin was slightly raised and everted, in contrast with the general dark hue of the African, formed a very striking picture. On a superficial examination, the appearances suggested a bad secondary syphilis; but after careful consideration, Dr Moore was led to the opinion that the disease was not syphilitic. That the man was at work, free from pain and pyrexia, and apparently easy in his mind—assured of a complete recovery—gave corroboration to his denial of syphilitic infection.

Compound Fracture of Skull and Laceration of Brain. By
Mr RUSHTON PARKER.

A NORWEGIAN sailor aged 19 was struck with the handle of a winch and severely injured about the head on the afternoon

of 4th March 1898. He was brought from the Manchester Ship Canal in the Mersey to the Liverpool Royal Infirmary, and operated upon by me the same night. There was a wound over the right frontal eminence, with comminuted fracture and depression of the bone. He was in a state of stupor, from which he could not be roused, the pupils acting but feebly to a bright light. After shaving and cleansing the parts, the wound was enlarged, the fragments of skull removed with elevator and forceps, and placed in a warm carbolic lotion of about 1 per cent., and the edges of the opening in the skull trimmed. The dura mater was much lacerated, and the brain torn. Under a copious stream of hot water, these parts were well cleansed, all shreds and fragments washed out, but the bleeding from the surface of the brain could not be arrested by ligature. So the dura mater was drawn together over it with silk sutures, and in parts where this membrane was insufficient to cover, a network of silk suture was formed across. This nearly stopped the bleeding. The best fragments of bone were then laid on the dura mater, some previously clipped smaller, until the gap in the skull was about two-thirds covered. The skin was attached over this by a few sutures of silkworm gut, and a dressing of cyanide gauze applied with a sponge included, for elastic pressure, all moistened with warm carbolic lotion, 1 in 20, and inclosed in a capelline bandage.

The patient slept well, and in the morning had regained consciousness. The dressing, having slipped, was changed next day, and the subsequent progress was speedy union by first intention. No food was given for a couple of days, but the patient became hungry, and so was given a little light food, and a day or two later, ordinary diet.

He was soundly healed in a week's time, the dressings being changed only once or twice more. At each inspection pulsation over the gap was perceived, but diminishing gradually. In a fortnight pulsation had almost disappeared, and he was quite well and in perfect health. His captain was requested to keep him from all hard work for the first three months, so

that if possible no subsequent after-effects might ensue. He attended the meeting of the Medical Institution on 31st March 1898, the seat of injury being by that time firmly ossified, and nothing wanting, so far, for a perfect result.

Tumour of Oesophagus. By Dr PERMEWAN.

REMOVED from oesophagus of a woman aged 46, by sub-hyoid pharyngotomy. Preliminary tracheotomy ten days previously. Favourable course for six days after operation. Removal of tracheotomy-tube and development of pneumonic symptoms. Death on eleventh day. Consolidation of small portion of right lung and extensive bronchitis.

Origin of Tumour.—By a pedicle from the posterior wall of oesophagus, immediately behind the larynx. The tumour filled the hyoid fossa, and much obstructed the gullet. It was adherent in only one small spot to the posterior wall of pharynx, and reached into the mouth, from which it could be seen on depressing the tongue. It was removed with the greatest ease with scissors, and bleeding was comparatively slight.

Structure of Tumour.—A fibro-myxoma.

Hypertrophied Inferior Turbinate Bones.

The front half of right and left inferior turbinates removed from a young lady aged 24. There was almost complete obstruction of both nostrils, and consequent naso-pharyngitis, with most distressing hawking and spitting of mucus. The bones were removed with long nasal scissors, under gas, and there was not much bleeding. Healing was rapid.

They show considerable hypertrophy of both mucous membrane and bone, and obviously no treatment other than removal would have been of any avail.

MR ROBERT JONES read a paper on "The Prevention and Correction of Short Leg in Hip-Disease," and stated that, no

matter what care be taken in the early treatment of hip-disease, a certain amount of deformity seemed inseparable from a large number of cases. The percentage was variously stated by different authors to be between 70 and 80. Doubtless, certain factors tended to lessen this estimate, prominently amongst which would be placed the early diagnosis and treatment, and the efficient mechanical control of the limb. In his own practice, Mr Jones was obliged to admit that, until recently, in a proportion of cases (certainly small), even where a patient had presented no appreciable deformity, he had been powerless to prevent shortening. That his experience was not unique was proved by the literature of the subject, and by the continued efforts made by surgeons at home and abroad to devise methods for the prevention of short leg. However effectually a surgeon might modify, by mechanical means, deformity in active arthritis, much more radical measures were required where the joint was sound, but ankylosis and deformity remained. It was with a view of endeavouring to simplify the methods of preventing adduction, and to facilitate its correction once it had occurred, that Mr Jones submitted this short statement for consideration. The deformities which constituted short leg comprised all or most of the conditions of flexion, adduction, internal rotation, tilting of pelvis, and arrest of growth. The first four of these conditions, viz., flexion, adduction, internal rotation, and tilting of pelvis, might possibly be avoided where there was an early case to deal with. The shortening effected by arrest of growth could only be modified by deflecting the pelvis sufficiently to ensure apparent equality of the limbs. Mr Jones did not wish to enter into a discussion as to the causes, but stated that, contrary to the teaching of surgeons, it often occurred without the complication of abscess; that it often occurred suddenly, and in quite a number of cases happened in robust children, while being absent in the weakly and emaciated. He further added, that though adduction was common in the so-called first stage of hip-disease, he had frequently noted in cases with what

might be called a strongly deforming tendency, that adduction was present almost from the first, and that adduction had not once been noted in the so-called first stage. Again, one had to recollect that adduction might occur without tilting of the pelvis, and without displacement of the femoral head. In proof of the fact that body-weight was not the all-important factor in the production of deformity, as many authors stated, one had only to adduce the fact that the whole series of elements which constituted short leg might appear while the patient was lying in bed.

Mr Jones stated that the best routine appliance for hip-disease was undoubtedly the Thomas splint, and he always used it in those cases where it was sufficiently effective to control deformity. For this purpose one generally employed the abduction body wing, and should thoroughly master the not easily nor generally acquired art of its application. In some cases, where the structures about the joint seemed to thicken early and glide backwards, Mr Jones used a special abduction splint. The new splint was so designed as to keep the diseased limb fixed in an abducted position, and effectively prevented any elevation of the anterior superior spine on the sound side; it governed rotation, flexion, and adduction, and, in his belief, solved the problem of the prevention of short leg; for, by its help, he could with confidence predict in every early case that recovery would take place without shortening, provided one had not to deal with arrested growth. The importance of this assurance would be appreciated when it was noted that while shortening occurred in say 70 per cent. of cases, arrest of growth in any but a barely recognisable extent occurred in not quite 15 per cent. Mr Jones found that this arrest was not usually confined to the femur, but was shared by the other bones of the limb.

In a discussion held lately at the Clinical Society, at which Mr Jones was present, Mr Watson Cheyne, in order to emphasise an argument, had stated: "No one would ever think of immediately straightening a hip or knee during any stage of

tubercular activity." Mr Barker had taken a similar view, and had referred to the dangers of general infection. In a later conversation with these gentlemen, Mr Jones had fully realised the wide difference which existed between metropolitan methods and those he had been accustomed to follow. In the practice of the late Mr Thomas, in that of Mr Rushton Parker, and in his own, it had always been the custom to rectify, with varying degrees of force, any tubercular joint in wrong position, so far as the phrase might be applied to the deformity known as flexion. He could hardly say how many hundreds of such cases had passed through his own hands. Not only had he never waited for recovery to take place from the tubercular process as a preliminary condition, but he looked upon the active stage as that most appropriate for reduction, on account of the great facility with which it could be effected. In the case of the knee particularly, Mr Jones commonly reduced an angle of 30 to 40 degrees, and allowed the patient to travel home the same day sometimes a considerable distance. He did not think that his statistics were in the least harmed by such seemingly rude methods; on the contrary, he had every reason to be more than satisfied with the results. In the case of the hip, even extensive flexion deformity did not shorten the limb to nearly the extent that adduction with pelvic tilting did, and for some time Mr Jones had attended chiefly to the prevention of displacement of the head, and to keeping under control the level of right and left anterior pelvic spines.

In all cases of displacement of the head, Mr Jones's practice was to endeavour to at once reduce shortening by force sufficient to effect this end. If this were attempted while disease was active, and before ankylosis, fibrous or bony, had had time to take place, scarcely any difficulty was experienced, and pulleys had rarely to be used. This, of course, referred to the case of children. The force which governed the displacement generally sufficed to rectify pelvic obliquity, while the flexion could be overcome at the same time by ordinary methods. If

the case were of long standing, and the structures around the hip-joint much thickened, two or three applications of the pulley might be required, at intervals of about a week. In cases where the tubercular process had subsided and ankylosis remained, certain further procedures were necessary, which would be described further on. Having restored as far as possible the displacement of the hip and the length of the limbs, the patient was placed in the new abduction apparatus, where, as Mr-Jones had stated, the parts were so combined as to effectively prevent the slightest tilting of the pelvis in any but the direction of advantage to the diseased side. The patient was maintained in this until that phase of disease, productive of deformity, had passed. When the disease admitted, the patient might then be transferred to an ordinary walking-splint, the abducted limb meanwhile being brought into its proper position, but practically during the whole of treatment he could live in the open air. Mr Jones was convinced that this abduction splint was an effective preventive of adduction from his own practical experience; but, if further argument were needed, it was supplied by the fact, without recourse to force, one could by its use gradually overcome any moderate amount of shortening that might be found to have occurred in a recent case. If it could correct deformity, it might much more easily prevent it.

Mr Jones then dealt with another important class of cases, and alluded to those cured of their hip-disease—some children, some grown-ups. They might have shortening, varying from 2 to 6 or 7 inches, due to femoral displacement and oblique pelvis. He had operated already upon about fifty such cases, and could speak most hopefully of results; and he mentioned that if anything like an accurate record of these deformities was to be kept, a simple method of measurement should be employed for fixing the degree of adduction, and estimating practical and real shortening.

Osteotomy had been practised for years to overcome the deformity of flexion. Rhea Barton performed it in 1826, and

he was soon followed by Clemmot, Rodder, Maisonneuve, and others. Adams first performed the operation subcutaneously. He divided the neck of the femur. The other operators worked lower down, but only Gant divided below the lesser trochanter. Probably Gant's operation was the most popular to-day, but personally Mr Jones preferred that of Adams, if one had only to deal with the deformity of flexion. Although something should be said in favour of a section—that could not be interfered with by a shortened psoas and iliacus—yet Mr Jones had found that in cases of right-angled deformity of the hip, the upper part of the femur left fixed after Gant's incision had an ugly way of encroaching upon Scarpa's triangle; and Mr Jones was also certain that even if an osteotomy incision were made through inflamed tissue, as must sometimes occur in Adams' operation, union was not in the least hampered. Personally, with a view of not merely rectifying a flexion angle which was the general object of a femoral osteotomy, but with the intention of lessening or obliterating adduction with pelvic tilting, Mr Jones made his incision obliquely through the great trochanter. This involved hard work often, because of the thickness and the sclerosed condition of the bone. The work was much facilitated by having a small knob on the end of the saw, such as one which had been made by Weiss. One could saw with much more energy when there was no danger of either transfixion or of losing one's place. Where practicable, it was better to saw completely through the bone rather than a certain distance, and he preferred going through the trochanter because of extra callus exudation, as an ununited fracture would spoil the intention of the operation. The adductors were next subcutaneously divided, and in the case of a youth or adult, traction was applied by means of pulleys. Very often an inch or an inch and a half could be gained by this traction, and some of the shortening of actual displacement might thus be combated. The leg, still fully extended, was placed in a position of abduction, which varied with the degree of pelvic tilting. The

greater the tilting the greater must be the abduction. The pelvis, on the sound side, was fixed, and the abduction splint applied, extension and abduction being maintained. Seven or eight weeks were allowed to elapse, until in fact bony union was completed with the limb in abduction, and at an angle with the body.

It was to be noted that the length of the limbs could be equalised in one or two ways, or by a combination of both, either by lessening the practical length of the sound limb or increasing that of the short one. By osteotomy and extension the leg was actually lengthened; by the osseous union of the femur in abduction with the pelvis, the elevation of the pelvis on the opposite side was effected.

With an outstretched thigh in one piece with the trunk it was clear that the limb could only be adducted by elevating the pelvis on the sound side, and in this way several inches of shortening might be remedied.

A more difficult class of case to deal with was that where short and firm fibrous union obtained. In such cases Mr Jones was accustomed to divide the adductors, extend, and forcibly abduct, and if attempt at lateral movement threatened fracture he performed an osteotomy as if for bony ankylosis; he thought it was better in such cases to proceed forthwith with osteotomy rather than complicate the issue by forcing the fibrous bands.

Such cases required to be kept much longer in a splint than those where the fixation was bony; and in two or three such instances, from a want of experience in this matter, the early removal of restraint had resulted in some return of deformity. It might be supposed that this fibrous union would still allow the adductors to act, no matter how long the restraint and stretching. This was not so, provided sufficient abduction were obtained to counteract any subsequent slight fibrous contraction. If the limb were abducted for a sufficient length of time, further contraction was not likely to occur; and this accorded with what one might assume to be a surgical

axiom, that a deformed limb due to arthritis retained the same degree of movement after correction as it possessed before, and that if ankylosed at the moment of rectification it was equally ankylosed when reduction was completed.

When the splint had been removed, the patient should be confined to bed for some time until the abducted limb had been gradually brought into position; and exercises should be prescribed, designed to elevate the pelvis on the sound side, and depress it on that of the diseased. These exercises were very necessary adjuncts, and in the case of adults especially, materially improved the character of the walk.

Mr Jones did not enter into the question of pseudo-arthrosis, except to state that its results in his hands were most uncertain, and that by its attainment the rectification of deformity was not at all complete. He almost exclusively employed it for the relief of double ankylosis. Of the fifty cases of bony ankylosis upon which he had operated by the trans-trochanteric osteotomy with abduction, he briefly stated that in most the practical shortening was obliterated, and that in the rest it had been lessened almost to the point of disappearance. Suppuration had not occurred, nor were there any symptoms of gravity. The pain, which in earlier cases was marked, Mr Jones had learned to avoid by careful adjustment of the groin-strap. In two cases tubercular abscess had presented, but in both the operation had been performed during active disease. The general health notably, as evidenced by sleep and appetite, had been well maintained.

In conclusion, Mr Jones stated that, for the prevention of short leg, he would suggest—

- (a) That abduction of the diseased limb be maintained.
- (b) That the apparatus to attain this should also govern flexion and adverse pelvic tilting.
- (c) That where arrest of growth threatened, pelvic obliquity should be summoned to assist.
- (d) That where displacement of the head had occurred, immediate reduction should be attempted.

For the correction of short leg with bony ankylosis, Mr Jones would recommend—

- (a) Oblique trans-trochanteric osteotomy.
- (b) That the adductors be subcutaneously divided.
- (c) That the limb be placed in the position of abduction and extension, and kept there until firm union occurred.
- (d) That after union the splint be removed, and the limb allowed to slowly leave the abducted position.
- (e) That exercises be systematically done in order to depress the pelvis towards the affected side.
- (f) That in case of fibrous ankylosis where no osteotomy had been performed, the abduction should be maintained for considerably longer in order to avoid recurrence.
- (g) That this treatment be as much as possible carried out in the open air.

Mr R. W. MURRAY said the chief factor in causing adduction in hip-disease was the position the child naturally assumed when in bed, viz., lying on the sound side, the diseased limb then necessarily falling into a position of adduction. He had frequently straightened, under chloroform, deformed tuberculous joints, and had never known general tuberculosis to result.

Dr THELWALL THOMAS mentioned a case of double hip-disease, with adduction of both limbs, producing cross-leg deformity. Ankylosis of the left hip was bony, the right fibrous. Sub-trochanteric osteotomy and division of adduction was performed on a femur three years ago, and the limbs kept abducted until union occurred. This was followed by marked improvement in gait.

Mr PARKER also spoke.

FOURTEENTH ORDINARY MEETING, HELD 14TH APRIL 1898.

DR MACALISTER showed lantern photographs of the post-mortem appearances in a case of transposition of the viscera. Every viscus in the body was transposed, including the fissuring of the lungs. The patient was a girl æt. 11, who had been under observation for two or three years, suffering from congenital heart-disease. Dr Macalister remarked that this was the third case of transposition which had come under his notice, but that he had not previously had an opportunity of making a post-mortem examination. In one of the previous cases (an infant) the transposition appeared to be complete; in the other (a girl aged about 15), the cardiac dulness and impulse were right-sided, but it was uncertain whether other organs were transposed.

DR STOPFORD TAYLOR showed a fair-complexioned girl, 6 years of age, suffering from an attack of urticaria of one month's duration, commencing shortly after measles.

White wheals, the size of a bean, appeared upon the cheeks, buttocks, legs, and forearms; those on the cheeks and arms became rapidly pigmented—urticaria pigmentosa; while those on the buttocks and thighs became haemorrhagic—urticaria haemorrhagica.

In some cases the haemorrhage was not confined entirely to the wheals, but was diffused into the surrounding tissues, presenting a bruised appearance.

Minute punctiform haemorrhages were observed in the mouth.

The eruption was rapidly subsiding under an anti-scorbutic diet and lime-juice.

He also showed a girl suffering from purpura, as a contrast case.

DR STOPFORD TAYLOR showed a case of ichthyosis in a boy aged 13 years.

The disease was symmetrical. The trunk and extremities were covered with greyish-green scales, except the following regions—the axillæ, flexures of elbows and knees, hands, intergluteal furrow, genitals, and femoro-scrotal regions, the inner side of the thighs, feet, the plantar surfaces, and all the toes, where the skin was supple and moist.

The face was dry and harsh, the hair poor, the finger-nails pitted and rough.

The boy applied for treatment at hospital owing to an attack of pustular eczema of the hands.

Lantern Slides of Transposition of Viscera.

DR GULLAN mentioned that when a resident in the Royal Infirmary, a man was admitted under Dr Caton, suffering from acute rheumatism; on making an examination of the heart, cardiac dulness was found absent on the left side, and the heart sounds on that side were very feeble; a cardiac impulse was then seen in the fifth intercostal space on the right side, and some cardiac dulness was found in the fourth and fifth right intercostal spaces. On percussing for liver dulness, it was found absent on the right side, but there was a corresponding area of dulness on the left side; a tympanic note similar to stomach resonance was obtained over the right hypochondrium and just below. No splenic dulness either on right or left sides could be made out. The case was considered to be one of transposition of the viscera; and as, unfortunately, the man died in a few days from hyperpyrexia and delirium tremens, this was proved to be the case. In this man, like the case just reported by Dr Macalister, all the viscera were completely transposed. The arch of the aorta turned to the right; and the inferior vena cava lay on the left side of the abdominal aorta. One interesting point about the man was, that he was decidedly *left-handed*; but on making a careful examination of the convolutions of the cerebral hemispheres, no distinct difference was detected.

Note on Osteo-Arthritis.

DR MACALISTER gave a demonstration, illustrated by lantern slides, of the various types of deformity produced by osteo-arthritis; and in the course of his remarks, he referred to the benefit which had resulted in a good many cases from the administration of blood which had been desiccated *in vacuo* at a very low temperature, with a view to the preservation of its contained ferments. He had treated many patients in this way, in all of them the more usual methods of treatment having previously been resorted to; and from the improvement which followed a prolonged administration of the blood in a proportion of his cases, he certainly considered it worthy of trial in this intractable disease.

Dr T. R. BRADSHAW alluded to the view of Bannatyne and Wohlmann, that rheumatoid arthritis was due to infection by a specific micro-organism which they had found in the synovial membrane and in the fluid of affected joints. Acting on Dr Bannatyne's suggestion, he had for several months employed creasote internally with considerable success, considering the intractable nature of the disease. He considered that the benefit which Dr Macalister had found to follow the administration of dried blood was quite consistent with the theory of the microbial origin of the disease, as the blood might contain some antidote to the toxins secreted by the bacilli.

Note on the Acidity of the Urine. By Dr T. R. BRADSHAW.

DR T. R. BRADSHAW read a note on the acidity of the urine. He showed that litmus could not be employed as the indicator in its estimation, because solutions which contained salts of phosphoric acid were never neutral to litmus; if they were not distinctly acid or alkaline, they were amphiteric. He advocated the employment of phenol-phthalein as an indicator, and maintained that the objections which had been urged against its employment were not valid. His observations led him to

differ from the teaching of Bence Jones and Sir William Roberts, who held that the acidity of the urine was diminished after a meal. He found, from the averages drawn from 160 estimations of the acidity of the urine of a healthy man, that the acidity followed a fairly regular curve; that it was high during sleep, fell rapidly after awaking, and remained at a minimum until about noon, after which it rose steadily, and reached a maximum about 9 P.M. He found that the absolute amount of acid excreted varied nearly on the same lines as the relative acidity; and further, that it varied inversely as the amount of water. The latter was a remarkable circumstance, which was unconsciously acted upon by the physician when he gave alkalies to promote diuresis. A number of charts were shown illustrating the variations in acidity described.

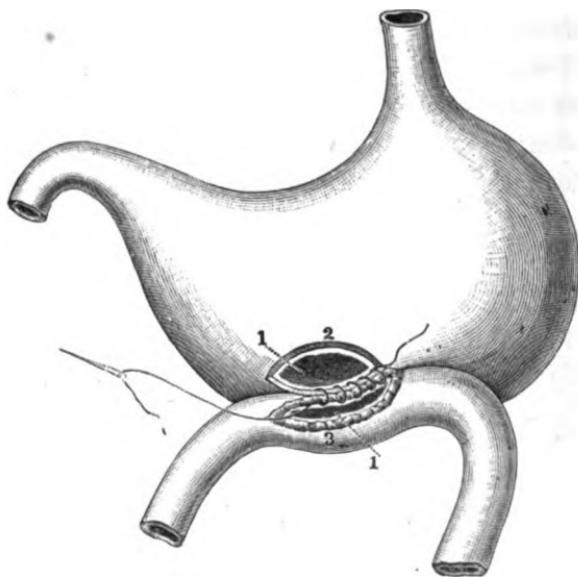
The Surgical Treatment of Pyloric Obstruction, with an account of Twenty Cases, and a Description of a New Way of doing Gastro-enterostomy. By F. T. PAUL, F.R.C.S., Surgeon to the Royal Infirmary.

(Abstract.)

OBSTRUCTION of the pyloric orifice may be due to (1) congenital insufficiency; (2) external pressure; (3) spasm; (4) fibrous stricture; (5) new growths. Twenty cases which had been submitted to operation for the relief of obstruction were described. In three, divulsions or Loreta's operation had been done; in five, pyloroplasty; in ten, gastro-enterostomy; and in two, pylorectomy. Loreta's operation was regarded as practically superseded by pyloroplasty and gastro-enterostomy. Pyloroplasty was the most successful operation ever introduced for the operative treatment of strictures. Gastro-enterostomy was successful when the patients were fairly robust, but very fatal in exhausted subjects. Pylorectomy should be reserved for favourable cases of cancer, in which the pylorus was not

fixed. The author criticised all the present methods of doing gastro-enterostomy, and suggested the following as an improvement :—

"The bowel and stomach having been exposed, a longitudinal incision is made in the former (for about two inches in the human subject) through the peritoneal and muscular coats only. These are reflected with a small curved blunt dissector over an oval area, having a diameter of about one inch in the centre.



1, the eschar in bowel and stomach produced by applying chloride of zinc to the exposed sub-mucosa ; 2, the wound in the stomach, the outer coats having been excised ; 3, the wound in the bowel, the outer coats having been incised and rolled back.

The exposed sub-mucosa is then rubbed with a stick of zinc chloride say half a dozen times, being well dried between each application, when it assumes a grey, dead look. The bowel is now wrapped in a piece of moist absorbent wool and laid on one side, whilst the stomach is dealt with in an almost similar way. In preparing the stomach for the anastomosis, instead of making a linear incision, an oval patch of the musculo-peritoneal coat is excised ; the muscular coat being so much thicker in this

organ, it is rather in the way if only reflected; and what is of more importance is, that the loss of substance helps to prevent subsequent contraction of the opening. Both the wounds having been duly cauterised, they are brought together, and a continuous suture of the finest green gut or silk is run round the edges, as shown in the illustration, not of course penetrating the mucous membrane, but picking up as far as possible the tough sub-mucous coat. Finally, a few Lembert or Halstead sutures are generally desirable, especially in anterior gastro-enterostomy.

The result of this operation in dogs—it has not been done in the human subject—is that the mucous and sub-mucous coats slough and entirely disappear between 24 and 48 hours after the operation, and good firm union seems to take place with great rapidity. The complete removal of the slough might be a somewhat slower process in the average human patient, but probably an anastomosis would be effected within 48 hours, which is practically as soon as food could be digested, and quite early enough, having regard to the proper adhesion of the external coats.

The features of this operation, which it is hoped may be reckoned as advantages, are—

- (1) The effect is that of pure traumatism. The viscera not being opened, all risk from such sources is avoided.
- (2) No foreign body is used.
- (3) The time occupied is less than for a suture operation, though more than for Murphy's.
- (4) The anastomosis resulting from loss of tissue should be more durable than the majority of methods."

Mr RUSHTON PARKER observed that Mr Paul had dealt very ably with a somewhat extensive and many-sided subject. He would not attempt to go into more than a few of the points raised, having at a recent meeting expressed his own views in relation to several cases in which he had himself performed pyloroplasty, not only in cicatricial stenosis, but in cases of malignant stricture, in one at least of which the plastic opera-

tion involved part of the diseased area. It was clear, however, that pyloroplasty must be of very limited application in malignant disease, and that, as Mr Paul said, the operation of gastro-enterostomy was the one most widely concerned. At the same time, Mr Parker's view was that the scope for ingenuity and enterprise, and consequently the interest, offered by malignant disease, fell far short of that deserved by other cases, and he had frequently refrained from extensive operations, of quite possible success, on that account.

Drs ROSS and CARTER spoke.

A Case of Multilocular Cystic Disease of the Jaw. By
G. P. NEWBOLT, M.B., F.R.C.S., Hon. Surgeon, Royal
Southern Hospital.

MRS J., æt. 64, a widow, consulted me in August 1897 concerning a large tumour involving the left side of her lower jaw (fig. 1). The history she gave was that twenty years before a swelling had commenced to form in the left side of her jaw. She could not remember any tooth aching at this time, nor did she connect the swelling with any tooth trouble. As it was hard and painless, and did not trouble her, nothing was done for it. During the last twelve months, however, a softer swelling had commenced to form in the neck external to the first tumour, and this was rapidly getting larger, causing difficulty in her swallowing powers, and giving rise to pain, shooting up the side of the neck and head. On examination, the patient, a stout, healthy looking countrywoman, presented the following appearances.

A large bony tumour occupied the whole of the left side of the jaw from the symphysis to the base of the coronoid process. The jaw was expanded internally and externally, but chiefly in the latter direction. On looking into the mouth, the upper surface of the tumour was indented by the first molar of the

upper jaw. There were no traces of teeth, and the gum was expanded over the surface of the growth. External to the bony tumour, and projecting well into the neck, was a large tense cyst, which was evidently causing pressure on the pharynx and surrounding parts.

The patient being under chloroform, I made a free incision into the large cyst, evacuated its contents, which consisted of almost black serous fluid, and after some trouble managed to dissect the greater part of the cyst-wall away from the surrounding tissues. I next attacked the bony portion of the growth, which turned out to be cystic, cutting away nearly the whole of the outer wall, and removing the bony partitions between the cysts of which it was composed. I found that the coronoid process was hollowed out, and that the cysts extended to the middle line. I next scraped out all the lining membrane which I could get at, gouging where necessary, and crushed in those portions of the outer wall which it was not possible to remove. One large cavity was all that now remained; and after closing the greater portion of the outer wound, I packed the cavity with iodoform gauze.

The further history is uneventful. When last I saw the patient in February she was quite well in health, and had resumed her occupation of marketing. A small sinus persisted, from which there was a little discharge. She, however, had no pain, and no difficulty in swallowing. There was a good deal of thickening of the left side of the jaw (fig. 2).

Reported well in May.

Pathology.—Cystic tumours of the jaws are always interesting, and I made some hundreds of sections of the different portions of the parts removed, *i.e.*, the outer wall of the bony cyst, the inter-cystic walls, the lining membranes, and the outer membranous cyst wall. Many of these sections I carefully examined, with the following results:—

The tumour consisted of cysts, the majority of which did not communicate with one another. These cysts were lined with a thick fibrous membrane, very adherent to the bony walls, and

presenting a polished appearance on the free surface. Microscopically, the membrane was fibrous in structure, and on the free surface the fibres were very dense, but in no part exam-



FIG. 1.

ined, even in the smallest cysts, could I detect an epithelial lining. The walls between the cysts were for the most part

bony, but in some parts fibrous. The bony tissue was permeated by Haversian canals, and in some parts these canals were much dilated. In those parts in which the bony tissue was of some



FIG. 2.

thickness, as for instance in places in which three or more cysts came together, the cancelli were dilated, and had almost a cystic

appearance. In one place in particular, I turned out a cyst the size of a pea, from what appeared to be cancellated bone. The majority of the cysts were about an inch in diameter, but there were also small ones scattered about. The large outer cyst was identical in structure with the other cysts, minus the bony wall, and it communicated by a small aperture with one of the larger bony cysts. The gum was flattened out over the upper surface of the tumour. The tumour reminds me very much of the one described by Mr Coote in the *Lancet* of 10th October 1857, the specimen of which, obtained after death, is in the museum of St Bartholomew's Hospital. In this case the patient was a man aged 75, and the origin of the growth was attributed to the stumps of decayed teeth. One of the cysts contained seropurulent, and the others albuminous or clear yellow fluid. The bone was irregularly expanded to form septa between the cysts: those which were independent of one another had their origin in the interior of the bone, were lined by a vascular membrane, and contained serous or grumous blood-tinged fluid. The walls of some of the cysts were thin and yielding, others were thick and resisting.

The contents of the outer cyst in my case was black serous fluid; in the other cysts some of the fluid was clear yellow, and some was glairy colloid-looking material. Eve is of opinion that simple multilocular cystic disease does not occur; and the present opinion is, that multilocular cysts are neoplasms of an epithelial nature, probably originating in connection with the ingrowth of epithelium which forms the enamel organ. Many think that it is quite possible that dental cysts, dentigerous cysts, and multilocular cysts have a similar mode of origin.

In the case I quote, however, there is no evidence whatever of epithelial formation. It may be that it forms the end of a series, the first and last of which bear no resemblance, but yet, if traced through, are found to be linked together. I have, however, examined a number of sections of multilocular cystic epithelial tumours in my possession, and in all these there are epithelial elements in some part of the growth, however cystic it

may be. My attention was drawn to the markedly dilated Haversian canals, and to the large cancellous spaces; and it struck me that a possible explanation might be found in this condition. Again, I certainly turned a tiny cyst out of the centre of a piece of cancellated bone. Is it not possible that irritation may set up morbid action in these spaces, causing their dilation and cystic formation?—let us say, tooth irritation at first; once started, there is no reason why the condition should not continue until a growth such as I have described is formed.

I cannot convince myself that a multilocular cystic growth such as I have reported, without any appearances of malignancy, can be of the same kind as those tumours described as multilocular cystic epithelial growths, many of which recur after removal; whilst it is an undoubted fact that many of the simple (if I may use the term) multilocular cystic tumours have given no further trouble after a gouging operation, freely carried out; and here I will quote the experience of Butcher. In other words, I venture to think that simple multilocular cystic disease does occur.

The nature of the operation in a case of this sort must depend upon the variety of tumour one has to deal with, and also upon the age and constitutional powers of the patient. In the case quoted, the absence of solid material, and the apparently innocent nature of the growth, together with the age of the patient, induced me to do a conservative operation. The patient herself was well satisfied with the result; but had there been intro-cystic material in abundance, or rapidity of growth, I should have proposed removing half of the jaw.

THE FIFTEENTH AND LAST ORDINARY MEETING, HELD
THURSDAY, 28TH APRIL 1898.

MR STANLEY KELLETT SMITH read a short note upon the 'Dum-Dum' Bullet, and exhibited a number of specimens illustrative thereof.

The rifles best known in England are those two which have successively been the later adoptions of Her Majesty's Government, viz., the Martini-Henry and the Lee-Metford.

The Martini-Henry, an excellent weapon, had two salient disadvantages :—

(1) The ammunition was bulky and heavy, so that the number of rounds which a soldier on active service could comfortably carry was strictly limited.

(2) The rifle had a high trajectory, by which is meant that the flight of the bullet was slow enough to show the influence of gravity to an important extent over, say, each hundred yards of its course, and to a quite perceptible extent over even fifty yards, the practical deduction being that a correct estimate of the distance of an object was necessary for accurate shooting.

The Lee-Metford, in which both of these faults are corrected, owes its possibility to the introduction of high-pressure powders. As compared with the Martini-Henry—

(1) The cartridges are both less bulky and less weighty, and are therefore correspondingly more easy of transport. The Martini-Henry bullet has a diameter of .450 inch, and the entire cartridge weighs about 14 drs.; the Lee-Metford bullet measures .303 inch, and its cartridge weighs a little over 7 drs.

(2) The flight of the bullet is more rapid, consequently the trajectory is much less curved and gives a greater allowance for error in estimation of the distance of the target. Shooting with the Lee-Metford is, for this reason, more accurate than with the Martini-Henry. The great beauty of the weapon in the hunting of game is the fact that it may be said to have a practically flat trajectory from 100 to 300 yds.

The more rapid initial velocity and the greater severity of the Lee-Metford rifling render the use of a soft metal bullet impracticable, on account of the great frictional heat developed during the passage of the missile through the barrel. The service bullet, therefore, was constructed of a lead core with a protective hard cupro-nickel envelope. This original pattern—with the complete hardened envelope—was a mistake. It was

speedily shown that the wound inflicted by it upon non-vital structures was not a disabling wound ; its small size and great rate of travel produced a clean-drilled hole, without the smashing effects and the shock which count effectively in the disabling of an enemy. An example which may suffice for all is the oft-quoted one of the Chitalee, who, after an engagement, *walked* into the British camp seeking attention for his wounds ; and who, upon examination, was found to have been pierced in various parts of the body by no less than five Lee-Metford bullets.

The first man to whom the failure of the new projectile was manifest was, presumably, the private soldier ; and he, since it touched upon his personal interests, proceeded to remedy the defect by rubbing the nose of each bullet upon the first convenient stone until the nickel covering was ground away and the soft lead core exposed. This little alteration constitutes the 'dum-dum'—not an original thought, for practically the same idea underlies many expanding bullets, and the identical pattern has long been known to hunters of big game and valued by them as a very good, though not the best, form of expanding Lee-Metford bullet. The action thereof is simple. Upon meeting obstruction the soft lead 'sets up,' and the internal pressure produced splits the nickel envelope into a series of ribbon-like strips ; these, bending outwards, transform the simple and comparatively innocent pencil-like bullet into an irregular star-like mass, which, since it has a rotatory as well as a forward motion, is capable of administering effective shock and of inflicting extensive and disabling wounds.

Case of Non-Diphtheritic Membranous Sore-Throat.

By D. J. RUSSEL THOMPSON.

ON the 25th March I saw a retired Indian Civil Servant, who had that day become hoarse. I found there was some redness of the posterior pillar of the fauces on the left side, and on the following day the local condition was more marked. On the

morning of the 27th there was, in addition, a patchy inflammation of the left side of the pharynx and some tenderness on swallowing, but no constitutional symptoms. I painted the throat with 5 per cent. sol. of nitrate of silver: that afternoon he began to suffer from pain in the back and legs, chills, anorexia, and fever; the temperature, which had up till that time been normal, was 101°, and there was a thin white exudate covering the left tonsil and left side of the pharynx, but scarcely any inflammation of the tonsil. I ordered sodium salicylate and chlorine water—the latter as a gargle. The following morning he was quite comfortable, temperature 99°, but the exudate had become distinctly membranous, and was dirty grey in colour: that morning constitutional symptoms were again marked, temperature 102°. I ordered Carlsbad salt ʒij. to be taken first thing the following morning, and on taking it the patient had an alarming syncopal attack, lasting about half an hour: I found the temperature normal, and on recovering from the attack the patient was quite comfortable, and remained so. The membrane had begun to disappear.

On the 5th day I removed a piece of membrane for examination: the mucous membrane bled slightly, but was not eroded. The membrane re-formed to some extent: another specimen was examined on the 8th day, and on the 9th the membrane had completely disappeared.

During the continuance of the constitutional symptoms, the pulse rate was increased 40 per cent., while the respirations remained normal; there was no albuminuria, no paralysis, and no adenitis.

The patient is a man of active habit, 54 years of age: he has suffered from malaria and rheumatic fever.

Convalescence was tedious, with marked asthenia and insomnia.

Bacteriological examination.—

Membrane of 5th day showed a bacillus, shorter and thicker than Llœffler bacillus, and no cocci.

Membrane of 8th day showed a bacillus longer than Lloeffler bacillus, and a rich culture of streptococci.

Dr CHAS. A. HILL pointed out that all cases of membranous sore-throat were not necessarily due to the diphtheria bacillus, but that streptococci were not infrequently the cause. In this case bacteriological examination showed, in his opinion, an entire absence of diphtheria bacilli, and the presence of streptococci. This may have been due to the antiseptic irrigation of the patient's throat. He thought the case to be one of streptococcal infection.

MR RUSHTON PARKER showed a man, now aged 38, in whom he had, in May 1897, performed amputation at the hip-joint for a recurrent tumour of the upper end of the thigh. In June 1895 the patient was admitted into the Liverpool Royal Infirmary, under the care of Mr Parker, for an affection of the right hip, attended by constant pain in the upper end of the femur, of some nine months' duration. The diagnosis lay between osteitis and tumour, but in the absence of definite swelling, at first, that of osteitis was made. A small soft swelling eventually appeared; and on incision over the hip-joint, the case proved to be a myeloid sarcoma, involving the whole of the femoral head and neck. The disease was removed, and the wound healed, all pain disappearing, and for a time good use of the limb resulted. Towards the end of 1896 the patient fell in the street, and was taken to the Royal Southern Hospital, under the care of Dr Alexander, who attempted to remove the growth. This not proving practicable, the amputation of the limb was proposed. For this purpose the patient placed himself again under the care of Mr Parker at the Royal Infirmary. The operation was performed at the date above stated, and he is now in good health, and apparently free from disease. He has resumed a portion of his duties at a bottling establishment, where his employer has arranged a light occupation suitable to his powers, affording him a slightly reduced pay, but satisfactory maintenance.

MR BANKS showed a female patient about 40 years of age, in whom the thyroid gland had been steadily and uniformly enlarging for fourteen years. She was extremely fat, and this, combined with the great size of the tumour, caused the chin and jaw to appear as if continuous in a straight line with the chest. At last the pressure on the trachea led to impending suffocation, and the patient dared never lie down, and could only obtain short snatches of sleep with safety. Mr Banks proceeded to divide the isthmus; but having succeeded in doing this, as the patient kept safe, he went further and removed the whole right lobe. He commented upon the difficulties of the operation in consequence of the patient's stoutness, of the danger from the anaesthetic resulting from the tracheal pressure, and of the large size and numerous vessels of the tumour. He noted the fact that, in order to avoid bleeding, the easiest way was certainly to divide the isthmus and dissect outwards, as against the usual practice of beginning at the edge of the gland and dissecting inwards. It was also shown that, since the operation, the left lobe of the gland had almost completely disappeared, with the result that the shape of the neck was now practically natural. The growth was of the nature of a uniform hypertrophy of the thyroid parenchyma.

MR BANKS gave a lantern demonstration, illustrated by ninety slides, of "Modern and Ancient Surgery." The first part consisted of pictures of pathological conditions of a rare nature, of operations for the relief of deformities, or for the removal of tumours or malignant ulcers,—in short, a demonstration of practical surgery. The second part illustrated the labours of Paré, Des Cartes, Woodall, Scultetus, Valverde, Dalla Croce, Jerome of Prague and other anatomists and surgeons of note.

Pathological and Microscopical Section.

MEETING HELD ON 10TH FEBRUARY 1898.

Note on the Action of Leukæmic Blood upon Typhoid and Anthrax Bacilli, with a reference to Phagocytosis in the coarse Eosinophile Cells. By ROBERT J. M. BUCHANAN, M.D., M.R.C.P.

(From the Pathological Laboratory of University College, Liverpool.)

THE object of the following experiment with leukæmic blood upon typhoid and anthrax bacilli was not carried out with any intention of notifying the serum reaction, but with special reference to the movement and phagocytic action of the leucocytes. The method of experimenting was as follows:—Upon a series of sterilised micro-slides small moist chambers were made by placing a double fold of filter-paper with a circular hole punched through, the filter-paper being moistened with 1-2000 HgCl₂ solution. Upon a corresponding number of sterilised cover-slips drops of blood were placed, which were obtained from the finger of a patient with spleno-myelogenous leukæmia, the finger having been rendered aseptic. The cover-slips, placed with the drops of blood downwards, over the apertures in the filter-papers, completed the moist chambers. A number of these drops of blood were inoculated with fresh bouillon growths of twenty-four hours' duration of typhoid and anthrax bacilli. A number were not inoculated, and retained for control observations. The full series were then placed on a wire-holder in a bell-jar moist chamber, and placed in the incubator. As occasion required, separate slides could be removed and transferred to the warm stage, and examined under the microscope. Specimens were fixed, stained, and mounted at regular periods.

I shall first note the results in the control drops. On the warm stage, amoeboid movement was recognised in the finely granular leucocyte; also, as far as one could distinguish, in the hyaline cell. The coarsely granular cells in some cases were actively amoeboid, but the coarsest variety, and evidently the atypical kind, found in the blood in this disease were extremely sluggish, many not showing any disposition to move. The myelocytes, recognised by their size, were non-amoeboid.

After a period of three hours, the finely granular cells were very active, the coarse very slow; in another hour the cells became less active, and there was no movement of their granules. Four hours later, amoeboid movement was still present, and the cells became very lively when stimulated with a little extra warmth; there was no movement of granules. This condition of things lasted for a considerable time, and even eighteen hours later, that is, about twenty-six hours after the preparations were made, there were still one or two cells showing active movement; there was no movement of the granules, and when the observation was terminated, the cells were very shrunken.

Typhoid.—Half an hour after preparation there was well marked clumping of the bacilli, and loss of movement. There was good amoeboid movement. Four hours later the clumping had disappeared, and the bacilli had become very motile. Amoeboid movement had stopped, and there was no evidence of phagocytosis. The cell granules were very agitated, and many cells were seen to be already dying.

Five and a half hours later, the bacilli were very motile; not so, however, where fibrin had been deposited; they were increasing rapidly in numbers. There was no amoeboid movement in any of the cells, no swelling or seething of the cell granules. No phagocytosis could be discovered.

Ten hours later, movement of bacilli was still present, very like 'Brownian' movement, and whirling, no darting. They had multiplied greatly. No movement was noticed in the leucocytes; they had become quite round, and seemed more than

usually granular, but there was no seething of granules. No phagocytosis was present. Drawings were made from one of the specimens, showing the attitude of a leucocyte towards a bacillus. They were drawn at intervals of a few minutes, showing a leucocyte throwing out a pseudopodium towards three bacilli. At first quite spherical, the leucocyte showed seething of its granules; then the cell betrayed marked agitation and restlessness, constantly altering in shape. The nucleus remained spherical. Throwing out a pseudopodium towards the bacilli, this increased in length until it measured $\frac{3}{4}$ inch on the microscopic field; the bacilli were end on to its extremity; they never left it, and the pseudopodium moved round several red corpuscles to keep in touch with them, but no attempt was made to inclose them.

Anthrax.—Amæboid movement was markedly noticeable half an hour after preparation. Three hours later, amæboid movement was more pronounced, and active phagocytosis established. An hour later, the cells were still motile, in many the granules had commenced to seethe, phagocytosis was well marked. Four hours later many cells were swollen, and the granules seething; phagocytosis was noticed, but amæboid movement had stopped. At the close of another hour the granules were intensely agitated, especially in cells close to bacilli; there was no amæboid movement. Twelve hours later, there were still one or two seething cells; these very soon stopped. The bacilli had increased very greatly, and sporulation was pronounced. In stained specimens, phagocytosis was seen in many coarse eosinophile cells.

Summary.—Of the cells present, those which showed amæboid movement were the fine oxyphile, hyaline, and typical coarse oxyphile. The atypical coarse oxyphile was only slowly amæboid; the coarsest forms, not at all.

Phagocytosis was exhibited especially by the fine oxyphile and the hyaline cells, and by many coarse oxyphile cells, but not by myelocytes.

Phagocytosis was only exercised towards the anthrax bacilli,

not to typhoid ; in many cases the bacilli were materially altered and broken up, and in fixed specimens showed marked alteration in their affinity for stains, and also in their contour. This irregularity was carefully distinguished from sporulation.

An interesting feature was the fact that the typhoid bacilli were rapidly agglutinated and lost their movement, while the motility of the leucocytes was very active. However, as the bacilli recovered themselves, the leucocytes became, as it were, quickly paralysed, and rapidly died, showing no sign of phagocytic action ; although in isolated cells pseudopodia were extruded, as if influenced by a positive chemiotaxis. Such a condition may be analogous to the absence of leucocytosis in early typhoid, and its appearance when the disease is declining.

Contrary to the general consensus of opinion, phagocytosis was exercised towards anthrax by coarse eosinophile cells. This was observed in many cells, and the bacilli showed signs of having suffered by the process manifested by alteration in staining property and contour.

Observations on the Sputum in Asthma, with special reference to the formation of Curschmann's Spirals, and their relation to the Spasm. By ROBERT J. M. BUCHANAN, M.D., M.R.C.P.

THE spirals are of several kinds : they vary greatly in size, between those of microscopic dimensions, and others reaching quite an inch long, even when uncoiled.

They are of peculiar construction, and the twist is a complicated one : some exhibit only one direction of twisting, like the twist of a spiral vegetable cell or wire-spring ; others, again, possess a further secondary twist, so that the primary coil or single spring is twisted upon itself like a corkscrew ; and in others, a third coil is produced by the spiral incurving like a watch-spring, reminding one of the parasite *Trichocephalus dispar*. These spirals are very numerous in the sputum of

true spasmotic asthma, and may be easily recognised by the naked eye.

They are very difficult to mount and stain. The material of which they are composed is extremely like medusa substance, or a moistened jujube, or boiled tapioca. Pressed between two cover-slips or slides, they refuse to spread. They take hours to dry in the air; and if dried by the aid of heat, they lose all characteristic appearance, and form peculiar figures, like feathery crystals. Passed through the flame three times, on a cover-slip, they will not adhere; they shrink and lose their character in spirit; and by whatever method they have been dried, they rapidly swell again in water. Stained first with alcoholic eosin, washed, and counter-stained with methyl blue, it is seen that the gelatinous material stains deeply with the methyl blue, and retains it even in the presence of absolute alcohol: it is essentially basophilous. The spiral is composed of cellular elements embedded in this substance: these are entirely coarsely granular oxyphile cells. Around the central axis of the spiral are the cells, so closely packed that the spiral has a densely granular appearance. This granulation consists almost entirely of eosinophile granules, and is clearly demonstrated by staining with eosin.

At the periphery of the spiral these granule cells are looser, and many of them are drawn out into threads, like involuntary muscle fibres, only narrower; some appear as rows of red dots, with a blue nucleus about the middle of the thread. In some specimens it can be clearly made out that these attenuated cells are wound into the spiral, and occasionally they may be seen partially unwound in a fan-like manner, like threads from a spool.

Associated with these eosinophile cells are large numbers of ciliated epithelial cells, in all stages of fatty granulation, attenuated and wound up in exactly the same way. The spiral then is essentially a cellular structure, with threads derived from attenuated cells.

Throughout the general mucus of the sputum, there is a marked difference in its cellular elements as compared with sputa of other diseases: there is almost complete absence of the ordinary pus cell or finely granular leucocyte. The cells are all coarsely granular eosinophile, and they occur in very great numbers. Much shed epithelium is to be found. There is little doubt that the spirals are produced in the finest bronchioles: how it is they have this form is not fully understood. It has been suggested by Osler that this may be due to the cilia in the bronchioles acting in a rotatory manner, combined with the spasm of the muscles. No experiments are recorded upon the course of the currents caused by the cilia to give any foundation for his suggestion. I should think the spasm of the muscles would be the more important factor; and further, I can conceive of the spasm being spiral. The material is at the same time so tenacious and so elastic, that a force in one direction only would tend to block up the bronchioles; a wave contraction like that of the oesophagus would only produce an oscillation of the mucus, and not necessarily move it from its position. The only way in which such material can be made to progress along a tube is by a screwing movement, exercised in the same way as one twists a cloth through the neck of a bottle, or an india-rubber cork into it. Such a movement I can conceive taking place during the asthmatical spasm. This condition of things is not necessary with other forms of sputum, as the sputum of asthma is peculiar to that affection, and very intractable. My observations led me to the opinion that the spasm of asthma is not the primary factor of the disease, but a direct effort of nature to rid the lungs of a peculiar exudation, thrown out during a temporary, though acute, bronchiolitis.

The special character of the bronchiolitis is also emphasised by the profuse exudation of coarsely granular eosinophile cells, and the shedding of so much epithelium. I know of no other sputa in which these coarsely granular cells are found in such profusion. That they are present in other sputa cannot be

denied ; but while the finer leucocyte is markedly in evidence, the coarse cell is only occasionally found. I have examined all varieties of sputa for this special purpose, and hence my conclusion that the coarse cell is peculiar to asthma. In pure asthma, while the attack lasts, or during a repetition of attacks, this peculiarity of cellular exudation is invariably present ; only when the attack has subsided, and a pure bronchitis supervenes, does the cellular exudation alter, and acquire the character of ordinary muco-purulent bronchitis.

Two Vascular Tumours with marked endothelial proliferation, growing from the skin in the neighbourhood of a large congenital naevus of the right ear of a child. By J. EVERETT DUTTON, M.B., Ch.B. (Vict.).

(From the Pathological Laboratory, University College.)

PROFESSOR RUSHTON PARKER recently sent me to the Pathological Laboratory, University College, two small tumours for microscopical examination.

The growths were taken from a child, Minnie S., 8 years of age, who had on several occasions been admitted into the Royal Infirmary, under the care of Professor Rushton Parker, for treatment of a large congenital naevus of the right ear.

When the child was first admitted, the right ear was greatly enlarged, the vertical measurement of the pinna being three inches, the transverse two inches. The ear had a dark-blue colour, and pulsation was plainly visible throughout its extent. Behind the ear a similar naevoid condition was observed, extending downwards into the neck, and also upwards on to the scalp, for a considerable distance. This region was also dark-blue in colour, fading gradually into the normal colour of the skin, as the ill-defined margin of the naevus was reached. Lying close underneath the skin, large pulsating vessels were very conspicuous.

The last time patient was admitted into the Infirmary was in November 1897. The ear was then in a similar condition, though somewhat smaller, measuring $2\frac{1}{2}$ inches vertically, and $1\frac{3}{4}$ inches horizontally.

The two growths which I am about to describe were then observed. The larger one, situated just above the pinna, was a somewhat pedunculated tumour, about the size and shape of a pea ; it was covered by smooth, pink-coloured skin. The other tumour, situated mid-way between the occipital protuberance and mastoid process of the temporal bone, was smaller, but similar in character. No pulsation could be detected in these tumours. The mother stated she had noticed the growths only two months previous to the child's admission.

Professor Rushton Parker removed the growths with a pair of scissors, and cauterised their attachments with nitrate of silver to stop haemorrhage.

When I received them they presented the appearance of two small rounded tumours, soft in consistency. The larger tumour was the size of a large pea, slightly flattened, pink in colour, covered with delicate skin, somewhat wrinkled, from which projected a few fine silky hairs. It seemed to have been attached by a rather broad and rounded pedicle.

The other growth was slightly smaller, but presented similar macroscopical appearances. Sections were cut parallel to the plane of attachment of the tumours ; some were stained with haematoxylin alone, others with haematoxylin and eosin.

The photo-micrographs shown in the accompanying figures illustrate fairly well the structure of the tumours, both being histologically identical.

Fig. 1. A section across the whole growth. The photo was taken with Zeiss 35·0 mm. lens. The dark line around the edge of the section is the skin, which shows poor development of both epidermis and corium ; no papillæ present in the latter. Large veins in the section are seen cut across in every direction, surrounded by a thick fibrous adventitia, external to which is a mass of deeply staining tissue, which completely

surrounds the vessel, or runs parallel to its lumen, according to the manner in which the vessel is cut, whether transversely or in a longitudinal direction. Outside these densely staining areas are strands of fibrous tissue running in all directions throughout the section, limiting them, and separating them from one another.

Fig. 2 represents a more highly magnified section (Leitz $\frac{8}{9}$ lens), and shows the relation which the densely stained areas

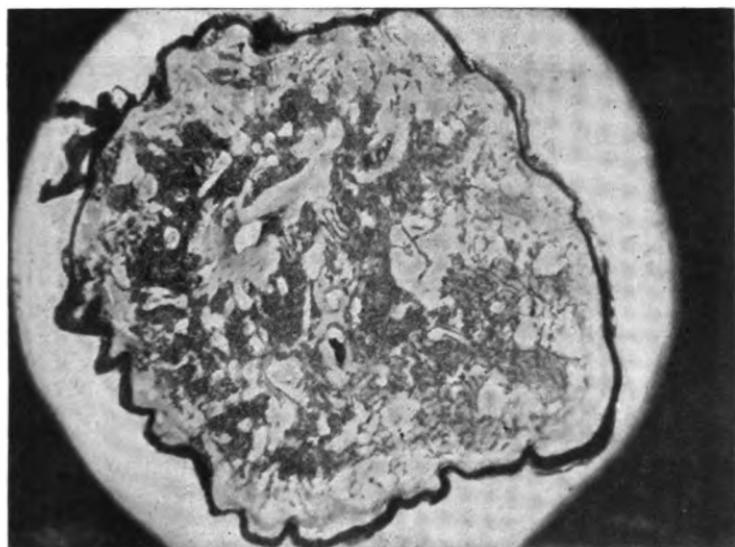


FIG. 1.

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bear to the large venous channels. To the right, and below, is a large vein cut across, containing a shrunken clot. The endothelial lining of the vessel is well marked (this thickened intima I have observed in many sections; in some cases the endothelial cells have been three to four layers deep).

Piercing the thick vessel wall, two small capillary vessels are seen, lined by endothelial cells, having large rod-shaped nuclei, rounded at both ends, and staining very deeply with haematoxylin. These endothelial cells, on reaching the exterior of the vessel wall, seem to spread out in a fan-like manner, and become lost in the densely staining masses that surround the

vessel. The capillary cannot be traced among these masses of cells; in fact, these deeply staining areas consist for the most part of enormous masses of endothelial cells, the nuclei of which are cut in all directions, corresponding, both in shape and in their affinity to the haematoxylin stain, to the nuclei of the endothelial cells lining the large veins, and the small capillaries.

In some of the large areas one or two very small capillary vessels are seen cut across, but no definite capillary arrange-



FIG. 2.

ment can be made out. These masses of endothelial cells lie in a very delicate stroma of soft hyaline material.

In a section stained with haematoxylin and eosin, red corpuscles stained by the eosin are seen lying here and there between the endothelial cells, and also in groups in the hyaline material outside the mass of cells.

Fig. 3. A photograph taken with Leitz $\frac{1}{4}$ lens shows more highly magnified the small capillary piercing the vessel-wall, and breaking up into the large mass of endothelial cells. In

this picture the hyaline material, in which the endothelial cells are embedded, is clearly seen.

Fig. 4 is a section of a large vein, partially cut into near its centre, showing numerous red cells in its interior. Just above this spot there is an outgrowth of capillary vessels, which, proceeding outwards for a short distance, breaks up into a mass of endothelial cells, growing upwards and downwards, parallel



FIG. 3.

to the vessel, and limited from further outward progress by the dense mass of fibrous tissue seen in the right-hand top corner of the photograph.

In this section one can clearly trace the continuity of cells forming the masses with the endothelial cells of the vessel.

Looking over the literature on endotheliomata and vascular

tumours in general, among the angioma, I find no description to correspond to the two tumours I have described.

Ziegler¹ describes three forms of simple angioma, viz., the ordinary capillary nævus or birthmark; a hypertrophic form, consisting of a large number of dilated capillaries, whose walls are considerably thickened, resembling small arterioles: the number of vessels is so vast that on section the basis tissue seems thrown out of sight. These tumours occur in the deeper parts of the cutis. The third form is the venous or varicose

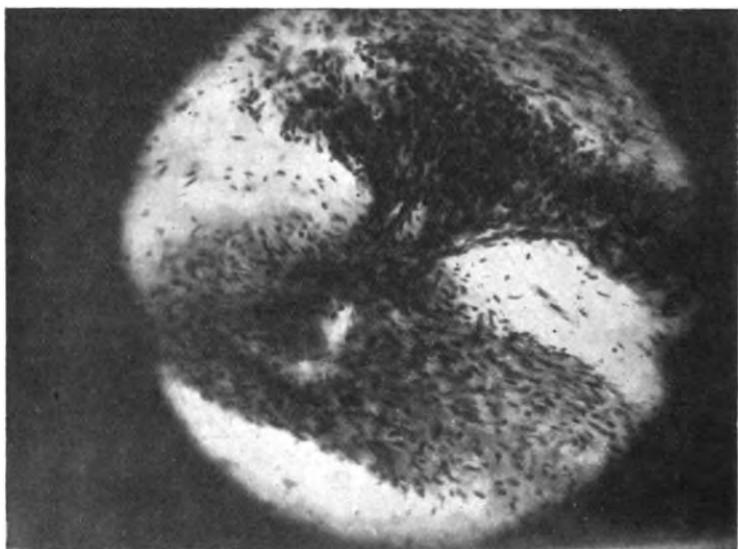


FIG. 4.

tumour. Hæmorrhoids, he states, come under this division. Lastly, he describes the cavernous angioma, occurring in the liver, skin, and in other situations.

Under the endothelial tumours, Coats,² Hamilton,³ Boyce,⁴ and other observers describe carcinomatous-like tumours arising from the endothelial lining of the serous cavities (pleural peritoneal) and from the membrane of the brain.

¹ *Patholog. Anat.*, p. 299, s. 100.

² *Manual of Pathology*, p. 310.

³ *Text-Book of Pathology*, vol. ii. part ii. p. 738.

⁴ *Morbid Histology*, p. 167.

Ziegler¹ describes the above tumours, and likens them to the alveolar sarcomata. Under a second group of endothelial tumours, Ziegler describes growths arising from the endothelial lining of arteries (angio-sarcomata). These growths are characterised by a perivascular deposit of endothelial-like cells, which surrounds the lumen of the vessels, and may be localised to their adventitial sheaths. "The tumour," he states, "is composed essentially of thick-walled tubes, which are partially isolated, but which, partly by anastomosis, combine themselves with others, and so form the plexiform angio-sarcoma."

These tumours resemble the growths I have described in the relation the endothelial growth bears to vessels, viz., completely surrounding them; but in my two tumours the endothelial cell mass surrounds the adventitial sheath of the veins, whilst Ziegler describes it as directly surrounding the lumen of arteries, stating that it may be limited to their adventitial sheaths. Ziegler also describes endothelial-like masses of cells occurring in pigmented moles and papillomata of the skin, which he thinks arise in connection with the lymphatics.

Professor Boyce² classifies the endotheliomata arising from blood-vessels and lymphatics into intravascular and extravascular (angio-sarcomata) tumours. The former arise as endothelial proliferations, growing out from the walls of veins, and forming branching plugs of cubical and other cell forms, which nearly or completely fill the lumen of the vessel. Under the extravascular tumours he describes two forms:—

1. Epithelial-like tumours, which grow into the stroma, and are supposed to originate from vascular and lymphatic endothelium.
2. Tumours which take the form of a cylindrical epithelial investment to a minute vessel and its branches.

¹ *Patholog. Anat.*, p. 316, s. 108.

² *Morbid Histology*, p. 168.

MEETING HELD ON 21ST APRIL 1898.

Observations on Pure and Mixed Infections in Pulmonary Tuberculosis in relation to Prognosis, with an Analysis of Twenty-one Cases. Illustrated by Microscopic Specimens.
By ROBERT J. M. BUCHANAN, M.D., M.R.C.P.

IN the year 1883 Robert Koch established the association of the specific tubercle bacillus with lesions in the lungs, which are now commonly included under the heading of 'pulmonary tuberculoses.' The recognition of this bacillus in the sputum of patients suffering from pulmonary phthisis, by special methods of staining, which differentiate it from other organisms, has proved of immense value to the clinician. The principle so often laid down by many authorities has been fully established, that the presence of tubercle bacilli in the sputum invariably implies the existence of tuberculosis. This fact alone emphasises the importance of Koch's discovery, and also of the necessity of rendering ourselves familiar with the very simple methods by which the bacillus may be recognised. The presence of the bacilli may not always be successfully demonstrated in a single preparation, and so it is advisable to examine the sputum on several occasions. For although the presence of but few bacilli would be sufficient to establish a diagnosis of tubercular disease, the converse does not hold true, and a negative result from one or more examinations would not justify the assertion that no tubercular lesion exists; a single positive result would set aside all doubt. You are all sufficiently well acquainted with this diagnostic procedure that I need not dwell upon it any further, but pass on to the chief point of my contribution. Assuming, then, a case in which tubercle bacilli have been demonstrated in the sputum, I shall ask you to join with me in considering of what import is this in relation to prognosis. Without any doubt the prognosis is rendered more serious; and we have been so tutored by teaching and experience, that a mental picture at

once arises of the tubercular lesion, its pathological histology, its different methods of progression, its subtle march, the train of clinical symptoms which follow, and the peculiar exhausting drain upon the system, which for ages have been associated with and summed up in the name 'phthisis.'

This mental picture influences us greatly in our judgment, and the memory of multitudinous unsuccessful attempts to combat or arrest the progress of this insidious enemy impresses the generality of minds with a forlorn hope.

In the next place, what can be gleaned from a comparative estimate of the number of the bacilli found in preparations? Many observers hold that the severity of the disease is proportionate to the number of bacilli found in the sputum. This may be so within very narrow limits, but by no means always the case; in fact, I am quite of the opinion that there is little or no positive relation between the two. One day the sputum may reveal large numbers of bacilli, another day very few: a great deal depends upon the particular portion of sputum examined. This may be easily demonstrated by examining a series of cover-slips from one specimen of sputum; the numbers will be found to vary with very wide limits. I may illustrate this by two instances out of very many. A youth under the care of Dr Glynn in the Royal Infirmary, whose expectoration, or the portion examined, on a certain day revealed a pure cultivation of *T. bacillus* in such profusion that the micro field was covered: the following day only an average number were present.

Quite recently I made two cover-slips of sputum in the usual way; one revealed large numbers of bacilli, the other few. In certain cases with but very limited lesions, large numbers of bacilli may be found; while in others with extensive lesions, one may find but few. In the acute tubercular conditions, the expectoration may contain but very few bacilli.

The formation of spores in the bacilli is of much more importance, and in the acutest forms spores are always present.

Now, if one takes a retrospective view of the various lesions in the body which are due to the tubercle bacillus, one is immediately impressed with two important factors in relation to prognosis. The first is, that much depends upon the determination of the bacilli to certain localities ; and secondly, that the general progress of the life-history of the organism is slow. An intra-vascular inoculation is necessarily rapid in its dissemination and in its serious result,—an implication of the brain, for instance, is extremely grave. On the other hand, tuberculosis of bone is an extremely slow process ; in a joint such as the knee-joint, again, we have a slow process. The same is particularly emphasised in tubercular enlargements of lymphatic glands, and in the lupoid tubercular infiltration of the skin. In many cases a hopeful outlook is afforded, and the disease is either arrested or permanently cured. Large masses of tubercular infiltration are found in the abdomen, and they disappear under certain conditions. This reflection tends to produce a more hopeful way of thinking. There is no doubt that the tubercle bacillus is endowed with powers of gradually eroding tissue and causing suppuration ; at the same time, the formation of tubercular nodules is held by many observers to be a cell proliferation invoked by the bacillus, and in direct opposition to its progress. For the purposes of argument, we assume that the virulence of the bacillus be a constant, and the cellular phagocytosis be also a constant ; then we may follow our investigation and endeavour to answer the question, under what circumstances, unassociated with differences of virulence or resistance, is the progress of the lesion accelerated ? The only way out of the difficulty is by looking for an ally which indirectly increases the progress of the bacillus, and at the same time reduces the resistance.

It has been found by experiment that inoculations of innocuous micro-organisms may prove fatal, provided another kind of organism be inoculated at the same time. Monti found that old and attenuated cultures of the staphylococcus *Pyogenes aureus*, or *pneumococcus*, always proved fatal, provided

a culture of an innocuous organism, such as the *Proteus vulgaris*, were injected at the same time. This brings us face to face with the consideration of mixed infections. It is chiefly to Babes that we are indebted for the knowledge of the various organisms met with in tubercular foci. In seven out of twelve cases of tubercular meningitis, various microbes were met with in association with the bacillus tuberculosus: in two, *pneumococcus*; two, *Streptococcus pyogenes*; in the fifth, *Staphylococcus aureus*; and two peculiar bacilli causing meningitis in rabbits. In tubercular otitis, *Bacillus pyocaneus* was found; while in a second case of tubercular otitis, oval saprophytic bacilli were found in the brain, an abscess of neck, spleen, and pleuritic fluid on right side. The tubercle bacillus alone was isolated in three out of seven cases of osteo-myelitis, and in these three the disease was exceedingly slow. In four the *Streptococcus pyogenes* was found, and in one case caused a fatal pericarditis.

In two cases of subcutaneous abscess, *Streptococcus pyo*. and tubercle bacilli were isolated from the pus; in one case the streptococcus was isolated from the spleen and exudation from the pleura. In a tubercular abscess exposed to the air, such as a suppurating cavity in the pharynx, lung, or intestine, numerous microbes, pathogenic and non-pathogenic, find all they want for their existence. *Streptococcus pyogenes* and *Staphylococcus aureus* have been found in the exudation of man in tuberculous peritonitis. In a case of metritis and salpingitis with miliary tubercle, the *Staphy. aureus* was present in the blood of the heart, lungs, and peritoneal abscesses. Suppuration in tuberculosis is due, then, to the bacillus itself, to the toxin products, and further, to other micro-organisms complicating the infection, or their respective toxines. It is needless for me to enumerate instances of mixed infections; in fact, the more we study the question, the more shall we be persuaded that pure infections in disease are comparatively rare, and that the gravity of individual cases rests upon the character and proportion of the mixed infection.

We must now return to the organs under consideration, and again ask ourselves the question—How does this potent factor,

namely, mixed infection, bear upon the prognosis in cases of pulmonary tuberculosis, and how are we to recognise it by simple methods? There is no doubt that its bearing is a very important one. A pure localised tubercular lesion of the lung is not so serious a condition as one naturally presupposes. Many cases of old standing, and quiescent or cured tubercular lesions, are found on post-mortem examination, when no suspicion has arisen during life. This alone goes far to prove that spontaneous cure is by no means rare. Such cases I would consider pure infections. Cases are ever passing through our clinical records where the disease drags on a slow course, where its ravages are limited, and the process of destruction prolonged. It is certainly, I am happy to say, the experience of many of us, that we can enumerate cases of cure which have been followed from start to finish. Such cases, I believe, have been cases of pure infection. On the other hand, we can produce a long list of cases that have rapidly gone down-hill in spite of all attempts to arrest or cure the disease. Such cases, I believe, have been cases of mixed infection. Quite recently (*Munch. Med. Woch.*, 4th Jan. 1898), Von Ziemssen draws particular attention to the fact that the condition of the lungs in tuberculosis is an extremely complicated one, and that the complication rests in the existence of mixed infections, and that the lung cannot be protected from the staphylococcus and streptococcus infections. Working independently, and after a prolonged investigation extending over a period of years, I have been convinced that the great source of danger in pulmonary tuberculosis resides in the association of the tubercle bacillus with other organisms; and that once this mixed infection has become well established, the prognosis is proportionately increased in gravity. Such a mixed infection may be due to a variety of organisms or only one species. My procedure has not yet enabled me to classify prognoses with certain organisms, or to say that this or that organism out of a variety is the chief culprit. I have chiefly confined my attention to two forms—the staphylococci and streptococci.

Now, to the question—How are we to recognise this condition of mixed infection?—I would answer, it may be done in several ways; but as we must walk before we can leap, I have adopted the first and simplest measure for primary consideration. As I have done this, I would ask you to look upon the answer as quite a provisional one, and bear with me in that it is necessarily incomplete, and quite a preliminary communication. To exhaust the subject of differential diagnosis of mixed infections would incur a profound investigation by all the most improved methods of bacteriological technique. This is out of the province of everyday clinical work. So I commence at the beginning, and take the first step, which we may leave to future work for special corroboration or otherwise, as the case may be, and for further elaboration. We must, then, return to the preliminary investigation of the sputum, which I consider we have carried out for diagnostic purposes in regard to the presence or absence of the tubercle bacillus.

The technique of microscopical examination having been carried out according to an approved method, notably the Ziehl-Neelsen, tubercle bacilli have been discovered in the sputum; and according to usual custom, influenced as I mentioned in the beginning of my note by previous adverse experiences, the specimen is labelled 'T. sputum,' the patient's name and date added, and a short report submitted, i.e., "The expectoration contains T. bacilli," and a grave prognosis is at once invoked. Little or no special attention has been given to the other forms, organisms in the sputum; and this, I consider, has been a serious oversight. It must be admitted that sputum at any time contains a variety of organisms, but these are not to be found in every case under similar conditions. Preliminary preparation is necessary to insure freedom from the ordinary organisms of the saliva as far as is possible, so that one may hope to obtain material from below the glottis, uncontaminated by its passage through the mouth. I therefore endeavour to obtain this result by the following method. A perfectly clean bottle, with a well-fitting cork, is given to the

patient, with instructions that, previous to using it, the bottle and cork must be placed in boiling water, the bottle drained, and the cork inserted while it is upside down; this is to be kept corked until used. After fasting for some hours, the mouth is to be thoroughly cleansed several times with a brush and antiseptic wash, all the recesses of the teeth and the tongue to be well scrubbed; after each brushing, the mouth is to be well rinsed out with the antiseptic wash, with as little delay as possible. The patient is to expectorate into the bottle, re-cork it, and submit it for examination as soon as possible. By this means one may obtain a fairly reliable sample of sputum from the lung. In proceeding to examine such a specimen, the small yellow particles are to be taken and the mucus left; for these particles, it is presumed, come from the deepest recesses of the lung. In such a specimen, stained by Ziehl-Neelsen's method, the *T. bacilli* will be stained red, and the other organisms blue. These can readily be detected with a $\frac{1}{6}$ in. lens and a good eyepiece, and this magnifying power is most useful for general purposes. One can easily distinguish the *T. bacillus*, and, from a morphological standpoint, recognise the presence of other organisms—staphylococci, streptococci, diplococci, the latter encapsulated or not, as the case may be, and also the *Micrococcus tetragonus*; or, in addition, mould organisms. So far, I have confined my examination to masses of staphylococci and chains of streptococci, although not ignoring the presence of other forms of organisms. I would suggest that the presence or absence of such mixed infection bears adversely or not on the prognosis, provided that our primary assumption of virulence and resistance remains a constant. The number of secondary organisms may vary greatly, but in some cases they are in such profusion as to form masses and long chains; and in one case particularly, I have found such a combination as true alveolar casts of tubercle bacilli associated with alveolar casts of staphylococci.

How this suggestion may be true within certain limits, I can best show by an analysis of a series of cases. The number

of cases is small ; but when one remembers that to consider prognosis at all, one must watch and wait for a prolonged period, even of years, then I trust you will limit your criticism accordingly.

I have submitted for your consideration a series of twenty-one cases, taken at random from hospital and private practice. Ten of these cases revealed a pure and eleven a mixed infection from examination of the sputum. Analysing briefly the ten pure, one is immediately struck with the fact that the disease has been exceptionally slow, with a tendency in some cases to remain quiescent or disappear. In Case I., the disease was established fourteen years ago, and tubercle bacilli found thirteen years ago ; they are present to-day, but the infection remains pure, and there is no tendency to any further breakdown. On the other hand, the lung is gradually becoming more and more fibroid, and the general condition of the patient is remarkably good, with gradual increase in weight.

Case II. passed through many vicissitudes of health, the infection remained pure, and the lung has completely healed ; there has been no cough or expectoration for twelve months.

Case VII. is another example of pure infection, with absolute recovery. The remainder of the pure cases illustrate, in varying degree, the slowness of the process, with a general tendency toward quiescence or recovery. Case X. shows marked improvement, although complicated with laryngitis.

The mixed infections, on the other hand, show no tendency to improve ; the general symptoms are more severe, with rapid emaciation; in three of the examples early collapse was shown by a want of reaction, subnormal temperature, and marked lividity. Case XVIII. was extremely rapid, both lungs involved, with a fatal termination in twenty-eight days ; in this case the expectoration showed plenty of tubercle bacilli, with large masses of staphylococci and chains of streptococci. Case XVII. revealed few tubercle bacilli, but swarms of other bacilli, which were invariably present during six months' observation. Case XIX.,

with a definite history of six weeks' pain and four weeks' cough, revealed numbers of streptococci on every occasion, and in this case the lesion is rapidly extending.

So far, I have not, in the analysis, laid any stress on the nature of the secondary infections. My observations have led me to note particularly staphylococci, streptococci, pneumococci, and various bacilli. In all cases where the streptococcus has been present, the condition has been proportionally severe. It is almost impossible to state at what period of the disease the mixed infection is likely to arise; it may be present from the beginning, as in Case XIX., or it may appear at an early date, or not until after a prolonged period of time. One thing I am convinced of—and here I am in accordance with Von Ziemssen—that the advent of a secondary inoculation of the pulmonary lesion with such organisms, in addition to the tubercle bacillus, materially alters the aspect of affairs, and renders the patient's condition excessively serious, and the prognosis proportionately grave.

It may be said that such mixed infections are always found in the late stages of phthisis; one cannot, however, judge the stages of phthisis with regard to time: note Case I. of fourteen years' duration, and Cases XVIII. and XIX. of definitely short duration: the former is late as regards time, early as regards lesion; the latter early in time, late in lesion. The mixture of the infection, again, does not depend upon the presence of cavities: in Case I. there is a well-marked dry cavity, with a pure infection; in Cases XVIII. and XIX. no cavities, but mixed infection. I have noted many such cases. That these secondary inoculations are present in the alveoli is illustrated by Case XVI., in which alveolar casts of tubercle bacilli and micrococci were found side by side in the same specimen.

Apart from any period of the disease, whether associated or not with existing cavities, I am led to believe that in a non-cavernous lesion, secondary infections cause rapid softening and extension, with cavity formation; or in a pre-existing cavity,

the advent of a secondary inoculation is followed by rapid ulceration of its boundaries, and in such a cavity there is little—I may with safety say, no—hope of it ever healing.

Time will not permit me further to pursue the subject. The short notes of the cases I leave with you for perusal at leisure.

[TABLES.]

NOTES ON A SERIES OF TWENTY-ONE CASES OF PULMONARY TUBERCULOSIS IN RELATION TO PURE AND
MIXED INFECTIONS.

Case.	Initials.	Age.	M. F.	Family History.	Personal History.	Lesion.	General Symptoms.	Infection.	Progress or Result.	
1	W. M. B.	44	M.	No phthisis.	Twenty-four years ago had congestion, right lung. 1888, had right pleurisy and pneumonia, followed by night sweats, cough; hectic fever. T. imp. F. R. 4 right lung. 1884, bacilli; thickened pleura, fistula in ano recurring several times. Cough continued; five or six attacks of hemoptysis during six years. 1891, worse night sweats again. Emaciating; tubercle bacilli in sputum, no other organisms. Rales, right ad. Small cav. Weight 10st. 7lbs. 1892, improved, no night sweats, occasional hemoptysis until 1895. 1895, consolidation, no rales, weight 12st. 7lbs. 1897, pain right side, T. 99°. Fine crepita, right base in front. Cough and profuse expectoration. 1898, 11st. 11lbs., gained 13lbs. since Sept. 1897. Tubercle bacilli still present.	Right side flattened, feeble expansion. Consolidation to fourth rib in front. Signs of dry cavity with cicatrisation at right apex. No moist sounds.	Slight morning cough present. T. normal. P. 72. App. good. No night sweats.	Pure infection.	Gradually improving. Gaining flesh. Does hard day's work as commercial traveller. Public singer. Complains of occasional slight morning cough only.	March 1898, keeps very well. No cough and no expectoration for twelve months. No general symptoms. Left neck and other fallen in over cicatrised lung.
2	F. E. T.	38	F.			Softening and cavity left apex.	Severe at first, gradually improved.	Pure infection.	MAY 1868, cough, night sweats, shivers, lost 14lbs. during twelve months. No hemoptysis; gradually disappeared; and lung completely cicatrised; heart drawn to apex. Continuous spitting at left apex. Softening present.	

3	L. S.	40	F.	†	pericardial friction on deep inspiration at fourth rib on left	Left pleurisy 1890. Cough since Oct. 1894, had severe haemoptysis. May, July, 1895, slight haemoptysis. Sept. 1895, consolidation and softening right apex. Weight lost 2 lbs. Feb. 1896, sst. 21 lbs. April 1896, pleurisy acute left side after haemoptysis. Aug. 1896, severe haemoptysis, slight occasional haemoptysis during 1897.	Consolidation and cavity right apex, with softening; gradually improved; lung becoming fibroid, moist sounds disappeared, some dry crackling. Cavity cetrified.	Medium all through except when she had acute pleurisy. Lost weight from Sst. 21 lbs. to 7st. 21bs. in seven years.	Pure infection.	No general symptoms. Except cough, breathless on going uphill. No febrile symptoms. Lung much improved. Nutrition good. Has gained weight since September 1897. Does daily work. March 1898.
4	J. O. J.	30	M.	Good No ph.	Feb. 1896, attack of right pneumonia with severe haemoptysis, cough followed, then night sweats.	Signs of incipient ph. at right apex. Fine crepitations over right clavicle with prolonged expiration. No cavity. Crepitations gradually disappeared, and returned in Oct. 1897, and disappeared in Dec. 1897. 8th Feb. 1898, lung drying up. March 1898, lung drying up.	Severe in 1895; gradually improved. Steady in weight.	Pure infection.	No general symptoms. Cough troublesome. Lung becoming fibroid, no breaking down, At business all through. March 1898.	
5	A. Y.	32	M.	Good No ph.	Cough since 1890. Dr F said lungs were affected. May 1897, severe haemoptysis, four attacks in two years. Night sweats and hectic T. Feb. 18, 14, 15, 1898, haemoptysis.	Consolidation, right upper In front. Crepitations all over. Friction at right base at side. Rales all over back. Consolidation right base behind. Lung fibroid. Creaking sounds all over right lung.	Severe at first with bad night sweats, improved during last twelve months.	Pure infection.	Gaining weight. Very breathless on exertion. No general symptoms. P. and T. normal. No night sweats. Not able to do manual labour because of breathlessness. March 1898.	

Case.	Initials.	Age.	M.F.	Family History.	Personal History.	Lesion.	General Symptoms.	Infection.	Progress or Result.
6	J. G. V.	21	M.	F. M., ph.	Perfectly healthy until Aug. 1865, had an attack of influenza with rigor. Cough followed in few days, dyspnoea and severe night sweats continued until Dec. 1865. Signs of rapid softening right apex, pleurisy right base. Improved until June 1866, but night sweats remained. Fresh outbreak of pleurisy and crepitations right side. Gradually became quiescent.	Signs of softening and breaking down right apex, gradually became drier and fibroid. 25th Feb. 1868, consolidation right apex and right base at back. Friction right base. Cog-wheel breathing left apex. Lung extremely fibroid; no softening.	Severe at onset, lasted ten months, gradually subsided. Gained 7 lbs. in eight months. Nutrition remained good.	Pure infection.	Nutrition steady. No sweats or hectic. Quick pulse, dilatation right heart. Lung extensively fibroid. Cough slight. Left chest much flattened. Improving very slowly. March 1868.
7	T. G. G.	..	M.	No ph.	May 1864, had influenza, followed by slight cough and expectoration. Feverish symptoms at intervals during summer, occasional night sweats and marked anorexia. August 1864, much worse, hectic, wasted, sweats very often until Nov. Cough worse. Lost 17 lbs. weight. Mar. 1865, two attacks dry pleurisy left side. April 1865, cough better, expectoration slight.	Crepitations right side at angle of scapula, with some consolidation. Utmost pain, with rapid wakening. Subsequent improvement, and increase of 17 lbs. in weight. Tubercle bacilli present.	Severe at onset, and for six months nutrition impaired, with rapid wakening. Subsequent improvement, and increase of 17 lbs. in weight. Tubercle bacilli present.	Pure.	31st March 1868, no general symptoms. Very slight cough in early morning. No physical signs. P. normal. E. T. normal. Steady nutrition, and feels in perfect health. No tubercle bacilli in sputum.
8	H. M. G.	42	M.	No ph.	History of morning cough and vomiting three years, probably atrophic. Doc. 1866, severe haemoptysis one week. Hectic and night sweats, wasted rapidly. May 1867, improved, occasional haemoptysis. June 1867, fresh outbreak, and further wasting. Cough severe, at Oct. 1867, very ill, had been drinking heavily. 11st. 7 lbs.	Signs of rapid softening left apex, over second, third, fourth ribs. Sounds became drier, and lung fibroid at apex. Cracking and crackling still remain.	Very anemic. Severe for some time, gradually improved, gained 5 lbs. in five months. Night sweats disappeared.	Pure infection.	Nutrition good. Colour improved. Cough much less. No hectic symptoms. P. 80. Lung shows tendency to heal. Made marked improvement. March 1868.

9	R. W.	19	M. F. died ph. Aunt died ph.	Sept. 1896, caught a chill. Couch, and night sweats followed. Very severe for two weeks, wasted rapidly and became anemic. Fehl 1896, signs of softening at left apex. During winter, 1896-97, had hemoptysis three times.	May 1896, pleurisy right side, three weeks in bed, followed by night sweats. In Dec. 1896, cough commenced, lost 14lbs. in two months. Cough continued until July 1897. Had two attacks of haemoptysis in 1897. Hectic fever during June and July 1897. Larynx became affected. Gained weight after July 1897, and night sweats stopped.	Severe at onset, gradually improved, and night sweats disappeared. Nutritive trituration rapidly improved during 1896. Weight in 1897 did not vary 1lb.	Pure.	March 1896, no general symptoms, no hectic. P. 72. Lung becoming shabby and cicatrizing. Chest flattening, with increase of cardiac dulness. Nutrition good and steady. Very little cough only in the morning, and scanty expectoration. Improvement continues.
10	W. R.	44	M.	No ph.	May 1896, pleurisy right side, three weeks in bed, followed by night sweats. In Dec. 1896, cough commenced, lost 14lbs. in two months. Cough continued until July 1897. Had two attacks of haemoptysis in 1897. Hectic fever during June and July 1897. Larynx became affected. Gained weight after July 1897, and night sweats stopped.	Severe at onset, afterwards subsided.	Pure.	Nutrition markedly improved, with gain in weight. No general symptoms. Larynx cleared up. Physical signs at lung greatly diminished, no moist sounds, and the lung is rapidly healing. 16th Feb. 1898. Has since taken command of vessel.
11	F. W.	21	M.	Father's side, two uncles ph.	Jan. 1895, had a chill, followed by cough and wasting, and repeated rigors and night sweats—two in a week. This continued, and cough became worse. June 1896, slight haemoptysis last five weeks.	Rapid softening at right apex. No cavity. Crepitaculation at left apex, with jerky inspiration front and back. Cavity formed at right apex after five months. Physical signs at left apex improved.	Severe, very anaemic. Hectic and sweats. Nutrition bad, lost 14lbs. in twelve months. Rapid pulse.	No signs of improvement. Patient rapidly went down hill, and died 16th Dec. 1897.
12	P. de C.	35	M.	No ph.	March 1896, had influenza with left pleurisy, followed by wasting, night sweats and hectic T., cough, and expectoration. May 1896, very anaemic and wasted, haemoptysis six weeks previous, hectic and sweats. Aug. 1896, gained 41lbs. Sweating stopped. Right lung also affected.	Rapid softening at left apex, with pleuritic friction sounds at base. Vomica left apex. Right apex slightly implicated later with softening.	Severe all through. Nutrition bad. Very anaemic. Much gastritis. Rigors.	Slight improvement at first, then rapidly got worse, and died early in 1898.

Case.	Initials.	Age.	M.F.	Family History.	Personal History.	Leison.	General Symptoms.	Infection.	Progress or Result.
13	C. S.	17	F.	Strong family history of ph.	Dec. 1893, cough and symptoms of incipient ph. Dec. 1894, wasting 3½ lbs. per week. Anemic and hectic with night sweats. Aug. 1895, condition much worse, and much dyspnoea.	Consolidation and crepitations at right apex, with friction. Consolidation at apex of left lower lobe. Cavity formed at right apex, which showed an attempt at healing, but softening at apex of left lower lobe supervened with ultimate breaking-down of left lower lobe altogether.	Very severe. Nutrition very bad, much gastric disturbance. Repeated shivers.	Mixed infection.	Rapidly became worse, with aggravation of all symptoms. Died early in 1896.
14	M.	20	F.	Aunt and uncle ph.	Nov. 1895, had influenza, followed by cough and night sweats, rigors, and wasting. Mar. 1896, much wasted, expectoration profuse, cough worse. May 1896, developed laryngitis.	Rapid softening at left apex with pleuritic cracking. Early implication of right apex and larynx.	Severe at first. Nutrition fair. Not much gastric disturbance.	Mixed.	Improved slightly, then became worse, and died Aug. 1897.
15	J. B.	18	M.	No ph.	2nd Jan. 1898, ill for twelve months with cough and night sweats, loss of flesh, and shivers. No haemoptysis. Expectoration profuse. Very anemic and cyanosed, with much dyspnoea and coldness of extremities. Fingers clubbed.	Softening at left apex, and crackling sounds, no special signs of a cavity. Physical signs to fourth rib in front. Early implication of right apex.	Very severe, much pallor and cyanosis, with subnormal temperature. Face puffy. Rapid pulse. Nutrition bad, with anorexia and vomiting, alternating constipation and diarrhoea. Pulse very small and rapid.	Mixed.	Rapidly becoming worse. Still under observation.
16	H. B.	38	F.	No ph.	Mar. 1897, caught cold, followed by cough, but no night sweats, cough continued. In Sept. 1897, had haemoptysis severe, twice again slight. Night sweats came on, and were severe, with hectic. Profuse expectoration. Lost 25lbs. in twelve months, losing 1lb. per week during Jan. 1898.	Rapid softening of right apex with small vernix at extreme apex, and at anterior border, second interpace. Friction over second and third ribs in front. Friction and leather cracking at base behind.	Very severe, marked anaemia. Nutrition impaired, with anorexia and vomiting. Rapid pulse and hectic febrile symptoms.	Mixed.	Still under observation. Lesion rapidly extending, and left lung involved at apex. General condition much worse. March 1898.

17	Rose B.	26	F.	F. died ph.	Sept. 1890, caught cold, followed by cough and hectic T., loss of flesh and appetite. Occasional hemoptysis.	Mixed.	Consolidation at left apex with fine crepitations and feeble breath sounds. No cavity detected. Pleuritic adhesions with jerky breathing. In three months softening rapidly ensued with formation of small cavity first inter-space and moist cracklings; in another month had enlarged, and lesion spread rapidly, with acute pleurisy left side. A month later right lung became affected, and sputum rapidly softened. A month later left lung crepitations all over.	Steadily went downhill. Condition became very much worse while under six months' observation. Ultimate history unknown.
18	T. H. C.	20	M.	No ph.	21st Jan. 1891. Hemoptysis one week ago. Perfectly healthy until April 1897. While racing April 1897, had severe hemoptysis. Attended chest hospital one month. No physical signs in chest. During eight months had cough, but no yellow expectoration. No night sweats, and nutrition was good. In Jan. 1897, after strain, spat up blood. Very anemic. T. normal. Skin moist. P. 96. Weight 9st. 7lbs. Chest broad and emphysematous. No abnormal physical signs detected, except prolonged expiration all over. Expectoration blood-stained, frothy mucus.	Mixed.	No signs of lesion at first, within three weeks; crepitations had developed and spread, both lungs completely involved. Hemoptysis lasted three weeks.	Death on 18th Feb. 1898, twenty-eight days after first observation.

Case.	Initials.	Age.	M.F.	Family History.	Personal History.	Lesion.	General Symptoms.	Infection.	Progress or Result.
19	M. B.	27	F.	One sister ph.	14th Jan. 1898, complained of pain in left chest, above the breast of six weeks' duration, cough four weeks. Was perfectly well previously. Slight frothy expectoration, clear mucus, with a few tubercle bacilli and chains of streptococci (17th Jan.). Night sweats severe,	14th Jan. 1898, jerky inspiration at left apex, with diminished breath sounds. 17th Jan., a tender spot at inner end of second interspace, next to sternum. A few respiratory crepitations detected over parasternal line in second interspace.	Severe night sweats, and loss of flesh. T. 99°5, mid-day. P. 96.	Mixed.	Rapid extension of lesion, with marked softening. General condition worse. Still under observation. March 1898.
20	J. B.	17	M.	No ph.	Perfectly well until Xmas 1897. Caught cold, followed by night sweats and rapid loss of flesh. Not much cough. Scanty expectoration. No hemoptysis. T. bacilli, 25th Feb. 1898.	Rapid softening at right apex; no definite cavity.	25th Feb. 1898. Severe night sweats, very cyanosed, rapid emaciation, gradual collapse. T. 96°5. P. 120, very small. Working until 20th Feb. 1898.	Mixed.	Rapidly going downhill. Right chest bringling, pectoro-thorax, oedema of legs. Breath sweet. Very little cough. Almost pulseless. March 1898.
21	J. G.	23	M.	?	Perfectly well until May 1897, when he caught cold, followed by cough and night sweats. Dec. 1897 had hemoptysis. Has rapidly become very ill.	Both lungs, 4th Feb. 1898, involved. Pleuritic friction and crackling all over both lungs. Crepitations at both apices, with rapid softening at left apex.	Very severe from the first. Marked lassitude and dyspnoea. Rapid failure of nutrition, with emaciation and diarrhoea. Pulse small, very quick. Skin hot and dry.	Mixed.	Rapid downward progression. Still under observation.

Old Softening of the Left Cerebral Hemisphere from Occlusion of the Left Middle Cerebral Artery. Shown by J. WIGLESWORTH, M.D.

THE convolutions destroyed comprised the whole of the third frontal and large portions of the second frontal, ascending frontal and parietal, paracentral lobule and superior parietal lobule, the whole of the insula, the whole of the supra-marginal gyrus, and a considerable area about the middle of the temporo-sphenoidal lobe. The left opto-striate bodies were greatly atrophied, especially the corpus striatum. In the crus there was complete disappearance of the left pedal system and substantia nigra; and the left pyramidal tract in the pons and medulla was also completely sclerosed, whilst in the spinal cord there was complete sclerosis of the right pyramidal tract. The left middle cerebral artery was plugged with a firm old decolorised thrombus.

The specimen was taken from a man aged 51, who died in Rainhill Asylum. He had complete motor and sensory aphasia and right hemiplegia, and could only articulate a sound resembling the syllable 'one,' which he repeated on every occasion. He did not understand spoken words or written or printed symbols, but he recognised objects shown him, and put them to their proper uses, and interpreted signs intelligently.

Aneurism of the Left Common Carotid Artery. Shown by J. WIGLESWORTH, M.D.

THE aneurism formed a tumour the size of an orange in the left side of the neck, where it reached from the level of the isthmus of the thyroid gland below, to a point midway between the hyoid bone and the tongue above, being separated from the latter by the submaxillary gland; internally, it was in contact

with the trachea, which it had pushed over to the right. Its outline was round, as seen from the front, the vertical and lateral diameters measuring about 8 cm. each, but it was somewhat flattened antero-posteriorly, this diameter measuring only 5·5 cm. The internal jugular vein and vagus nerve wound round its outer surface, the nerve being obviously stretched and flattened. The growth appeared to have commenced a little below the bifurcation of the artery on its inner side. The sac of the aneurism was entirely filled by coagulum, the greater portion of which, particularly at the posterior part, was old, laminated, and decolorised, whilst the remainder was reddish-black in colour, and of much more recent origin. The specimen was taken from a man aged 51, who died in Rainhill Asylum (the same patient from whom the specimen of softening of the left cerebral hemisphere was taken).

Original Articles.

COLOTOMY.¹ By F. T. PAUL, F.R.C.S., Surgeon to the
Liverpool Royal Infirmary.

COLOTOMY is a very familiar subject. Since 1882, when Mr H. A. Reeves of the London Hospital published in the *British Medical Journal* his first cases of the iliac operation in adults, it has been more or less constantly before us. During the past fifteen years surgeons have expended unlimited pains and ingenuity in their endeavours to construct an artificial anus, involving the least possible risk to life, and possessing the main features of the natural outlet. In the latter we have in some degree failed, while in the former something has certainly been gained.

The general substitution of iliac for lumbar colotomy occurred after I had been a hospital surgeon for about ten years. I had therefore a fair experience of the old before attempting the new operation, and I have no hesitation in saying that the iliac is without doubt the easier and the safer of the two. At the same time my actual experience of either is less than might be supposed from my opportunities. This is due to the fact that in malignant disease it has always seemed to me best to attempt a radical cure whenever possible; and on the other hand, never to do a colotomy unless there were distressing symptoms, which would be distinctly relieved by an artificial anus. With these views it happens that in malignant and other obstructions in the colon and rectum I have operated by excision on more than fifty occasions, while I can only find records of thirty-four cases of colotomy.

¹ Read at the St Helens Medical Society, Feb. 11, 1898.

In regard to the risk to life attaching to any particular operation, there are two ways of expressing it. One is a bare, a very bare, and partial statement of facts ; and the other is an expression of opinion based upon facts. The latter is the more valuable evidence when derived from a duly qualified and impartial witness, and not from an advocate. A bare and imperfect statement of facts is afforded by statistics. They are very valuable, but, as we all know, misleading, and, in my judgment, not nearly as good a guide as a deliberate opinion based upon experience. It so happens that my statistics support the view I have expressed regarding the safety of iliac colotomy ; but chance might have caused it to be otherwise, as often more depends upon the physical powers of the patient than upon the details by which the operation is carried out. All but five of the thirty-four cases were iliac colotomies, and there is one death traceable to the colotomy in each series.

As a matter of fact, the mortality directly and fairly traceable to the iliac operation itself is very slight indeed. The same may be said of the lumbar operation in the hands of a surgeon like Mr Bryant, but his experience in this matter is exceptional ; and from what I have seen of general hospital practice, I feel sure that the safety of lumbar colotomy is not to be judged on this surgeon's results.

I have placed this question of risk to life first, and apart from all other considerations, because it is such a tremendous element in discussing the relative value of allied operations. When the various merits and demerits of a proceeding are taken together, this point is sometimes lost sight of. I have on certain occasions listened to discussions on the relative safety of chloroform and ether, and always heard a preponderance of opinion in favour of chloroform. The speakers have been influenced by the impressions they have derived from the all-round merits of the drug. Their judgment has probably been perfectly sound, but they have lost sight of the point under discussion—that of safety, as regards which there can

be no reasonable doubt that ether excels chloroform. I do not question the wisdom of those who think chloroform a more valuable anaesthetic than ether; but I think, on the whole, it would be to the advantage of the public if the profession were more emphatic in admitting and upholding this one great virtue of safety as a characteristic of ether. I mention this merely as an illustration—not wishing to raise a much-vexed question—an illustration of the difficulty people find in conceding a virtue to a practice they oppose on other grounds. Those who oppose iliac colotomy, that is, left iliac colotomy—for I would oppose opening the cæcum myself—must find other reasons on which to condemn it, for I am fully persuaded that it can be accomplished with greater speed, ease, and safety than the lumbar operation.

When, however, we come to discuss the other chief features of these two operations, there is clearly room for some difference of opinion. As a matter of fact, in neither of them is the result altogether what we could wish, and for some reasons not so good as the artificial anus left after excising the rectum. The points to which I refer are—(1) Relief of urgent symptoms; (2) Formation of a good ‘spur’; (3) Freedom from prolapse; (4) Control over the act of defæcation. The relief of urgent symptoms is equally satisfactory by both methods. The formation of a good spur is best accomplished by the iliac method. Prolapse is less troublesome in the lumbar operation. Control over the act of defæcation is equally ineffective in both. The directions in which, therefore, further improvement is most desirable are, (1) in still further lessening the tendency to prolapse, and (2) in constructing an anus capable of controlling defæcation. Before making any suggestions as regards either of these points, I should like to refer to the practice of those who have contributed most to establish the iliac operation in its present position.

Mr Harrison Cripps was the first, in 1889, to publish a carefully planned and minutely detailed operation, which has steadily grown in popularity. A riper experience led him sub-

sequently, in 1895, to insist on certain points as materially contributing towards its success; and of the various methods which have been suggested, this seems to be that most generally adopted. The chief details are:—The incision is made high up, "nearly as high as the level of the umbilicus," and as small as possible. The parietal peritoneum is sutured to the skin. The sigmoid is withdrawn, and passed along from left to right till the highest portion that can be obtained is drawn into the wound; it is then sutured to the skin and parietal peritoneum, the sutures in the bowel being passed near its mesentery. The bowel is not opened until from three to five days later. Most of these details are intended to provide against prolapse. The higher the opening the less the pressure on it, and the smaller it is the less is the abdominal wall weakened. Prolapse comes from the upper end, therefore the less loose bowel there is above the artificial anus, the less likely is it to occur. The insertion of the sutures near the mesenteric margin of the bowel brings its back wall up to the surface, making a spur which causes all faecal matter to be discharged through the opening; without this precaution a good deal of faeces would pass the opening and go on to the natural anus.

In the early days of the revival, two or three other methods of operating were brought prominently under the notice of the profession. Mr Herbert Allingham withdrew as much of the sigmoid as he could out of the wound, fixing it by passing a suture through the skin and mesentery under the loop of bowel. At a later period the exposed gut was clamped and removed, leaving a double-barrelled opening. The primary operation was a very easy and rapid one, but the subsequent clamping and removal of a frequently considerable portion of bowel proved too severe to become generally adopted,—it was the cause of my solitary fatality; hence this form of iliac colotomy is usually accomplished by the simple process of passing a rod of glass, vulcanite, or some other substance through the mesentery under the bowel, and allowing it to rest on the skin on each side of the wound.

Another method was suggested by Mr Jesset. It involved dividing the bowel. This was followed by completely closing both ends by invagination, the lower being returned, and the upper left hanging out of the wound. A few days later, when adhesions had taken place, the projecting part was removed, and the open bowel secured to the skin. This again was a severe method, and appears to have dropped out of use. I think it made the best anus of all, but there is no doubt it was not so safe as Cripps' operation, or the rod method which sometimes goes by the name of Maydl's operation. The wrong end also has, on more than one occasion, been closed and dropped back into the abdomen,—an accident which is, of course, fatal.

An operation suggested by Mr Mansell Moulin must not be passed by without notice. He opened the abdomen on the line of the external oblique fibres, but withdrew the bowel through a second opening in this muscle one inch nearer the middle line, the original one having been closed by deep sutures. Thus the bowel left the abdomen by the original direct wound; then passed in the abdominal wall between the internal and external obliques for one inch; was then brought through a new wound in the latter muscle, and subsequently back to the direct wound in the skin. The intention of this irregular route, which is followed by the bowel from the abdominal cavity to the skin, is of course to secure an orifice somewhat under control of the voluntary muscles, and which it was hoped might prove more efficient than the ordinary artificial anus.

I have sometimes been credited with inventing an operation for colotomy myself. This, however, is hardly the case. In the early days of iliac colotomy there was perhaps more fear of opening the bowel at once than is the case now, though it is still considered very undesirable to contaminate the fresh wound with faeces. In many cases the operation is urgent, and the bowel must be opened at once; and it was a safe method of doing this that I suggested. My plan was to do the operation by one of the methods described, and then ligature a large curved glass tube

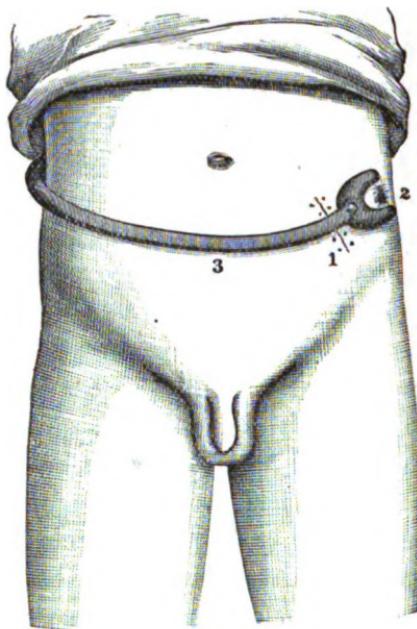
into the bowel at once, conducting the faeces into a bag of aseptic wool, or directly into a basin when there is a large flow. In the first case I used Jesset's operation, and received much criticism in consequence; but this method of draining the bowel is equally suitable in any form of operation; and after using it in Allingham's for a time, I have come, as a rule, to adopt it in conjunction with Cripps' operation, which is greatly shortened thereby, as very few sutures are necessary. For years I have in this way opened the bowel in all cases of colotomy at once, and have never yet seen any evidence of danger in doing so by this method. The principle involved in opening the bowel at once and draining it through a glass or rubber tube is, I believe, gaining ground. In time we shall all come back to the old practice of opening the colon at once and suturing it to the skin, though it can hardly be said that a perfectly satisfactory manner of doing this has yet been suggested.

Having now described the operation of colotomy as it is done to-day, and having expressed the conviction that in the present condition of our art we cannot expect to appreciably lessen the low mortality which accompanies it, I turn to that side of the subject where there are manifest imperfections,—where there is distinct room for improvement, and scope exists for that inventive ingenuity characteristic of recent surgery. The imperfections to which I refer are, the incapacity of the artificial anus to assume the complete functions of the natural passage, and its greater liability to the inconvenience of prolapsed bowel. That an artificial anus should ever be able to exercise the same perfect control over the act of defæcation as the normal orifice is highly improbable, owing to the impossibility of contriving a normal sphincter; but no doubt it will be found possible, in other ways, to afford a control which, if less perfect in its mechanism, may generally prove equally effective. How much may be accomplished in this direction by a well-planned device has been shown lately by improvements having a similar end in view in an allied operation: I refer to gastrostomy. Until quite recently the establishment

of a gastric fistula, as a means of relieving stricture of the oesophagus, was by no means generally popular. Those, however, who maintained a continued interest in the operation were all the time getting better results, and especially as regards mortality the improvement was marvellous. The great drawback was invariably leakage of gastric contents. This remained a frequent source of trouble, and was often so distressing to the patient that he was liable to more than doubt the benefit conferred upon him by an otherwise successful gastrostomy. So long ago as 1887 Hahn introduced an entirely new principle into the operation. He withdrew a piece of stomach through the usual wound, and dragging it upwards under the tissues, brought it out in the 8th intercostal space, without opening the pleura. In this way, in place of a direct opening from skin to stomach, a long fistulous track was produced, having its external orifice some 2 inches distant from the deep communication with the viscera. The result was practically perfect. Gastrostomy performed on this principle affords a most satisfactory fistula, which can be used or disused as occasion requires. On the one hand, it has no tendency to leak; and on the other, I have observed none to contract and close up. The improvement is a substantial one, and places the operation on an entirely different footing from that which it occupied before. It is true that Hahn's operation, as originally suggested by him, never became popular, because the high orifice in the 8th intercostal space proved both difficult and dangerous to accomplish; but others dropped the opening to the costal margin, where it is now usual to make it under the name (somewhat unfairly) of Frank's or Albert's gastrostomy.

Until I first did a gastrostomy by this method, I had quite come to doubt the value of the operation as a means of giving relief in cases of malignant stricture of the oesophagus. Now I am firmly persuaded that we have in it a means of rendering the last days of these hopeless cases comparatively comfortable, while at the same time life is prolonged.

The Hahn's principle, which has done so much for gastrostomy, seemed to me also capable of being applied to colotomy, and I have recently tried it in four cases. Whether this method will enable a patient to exercise control over defæcation, without the help of a truss, it is too early yet to say; but quite sufficient experience has been obtained to show that at any rate, under ordinary circumstances, the escape of motion is completely controlled by the use of a spring truss, with a horseshoe pad.



An improvement in colotomy. 1. The original incision. 2. The artificial anus after the bowel has passed between the oblique muscles. 3. The truss compressing the bowel in the abdominal wall.

In doing the operation, I have made the incision in the line of the internal oblique fibres, withdrawn the bowel, attached it by one or two sutures to the deep part of the wound, then passed it under the external oblique directly backwards for about 2 inches, where it was brought out and sutured to the skin; the original skin wound and the opening in the external oblique being completely closed.

Such an operation would, of course, be impossible when the

mesentery was very short ; but that happens so rarely, that I have only met with it on a few occasions.

In the first case, October 1897, I thought the double fold of sigmoid rather bulky for passing under the tissues, and decided in a future case to divide the bowel, and pass only the upper end between the muscles. This was done in the third case. It was successful, but there was nothing in the result to warrant the greater severity of the operation, and I did not repeat it in the fourth case.

There appears to be no danger in at once opening the bowel and suturing it to the skin wound by this method, as the artificial anus is so far from the peritoneal cavity. At first faeces do not readily flow from the orifice unless there is plenty of *vis a tergo*, on account of the sharp bend in the bowel and the pressure of the abdominal muscles. The opening should not be less than an inch in length or it will offer obstruction, and its long diameter is best placed vertically. The original wounds have healed well by first intention. Of the four patients, two were women in fairly good health, and the other two old men, with advanced cancer of the rectum. Both the latter bore the operation quite as well as the simplest form of colotomy, and derived such comfort as was possible under the circumstances ; but both have since died, from the cancerous disease. One of the women, the first, had incurable syphilitic stricture. She is quite able to control the bowels with the help of the truss, but not without it. In this case I made the orifice too small at first, and then slit it up so much that she had too large an opening, so it has been a good test case for the truss. All the other openings have been excellent, and tucked in just like a natural anus. Up to the present I have felt very pleased with the result of this form of colotomy, and quite believe it will become popular.

I should like now to say a few words as to the relative advantages and disadvantages of the various sites at which a colotomy may be performed. The golden rule here is to open the bowel as near its lower end as possible. When the

reaction first set so strongly in favour of iliac colotomy, the operation was always to be iliac, left or right; but, from the patient's point of view, these two operations are at opposite ends of the scale: left iliac is the best, and right iliac the very worst. Opening the cæcum means sore skin, constant dribbling of liquid faeces, and its accompaniment of foul odour. Right iliac colotomy should only be done on emergency, and then generally in the hope and expectation that it will be possible to improve on it at a later period, when the urgent symptoms have been relieved.

When the disease is in the rectum, few will now hesitate to advise a left iliac colotomy. When it is not in the rectum, the first thing to do is to make a diagnosis as to its site. In this, one is chiefly guided by (1) the presence of a tumour; (2) recognisable distension of the large bowel above the stricture; (3) traces of visible peristalsis, commencing in cæcal region, and passing away at the seat of disease; and (4) the amount of fluid which can be injected per anum. When a tumour can be felt, and its size and other circumstances indicate that excision may be possible, the abdominal incision should be made directly over it. When the tumour cannot be felt, but other symptoms point very strongly to its situation in the sigmoid, an exploratory incision should be made in this region, because the sigmoid is more frequently attacked with malignant disease than any other part of the colon, but under no other circumstances ought one to make an exploratory incision out of the middle line. My rule is therefore, when the disease is not in the rectum, and no tumour can be felt, and the symptoms do not clearly point to the sigmoid, to make an exploratory incision in the middle line, locate the disease, and proceed accordingly. When colectomy or excision of the diseased part is not admissible, if the obstruction is in the sigmoid region, left lumbar colotomy should be done. If in the descending colon or splenic flexure, the transverse colon should be opened in the middle line. There is no serious objection to an artificial anus in the middle line when it com-

municates with the transverse colon ; but if other parts of the colon are opened in this position, they are said to drag later, and prove uncomfortable. If the disease is situated in the transverse colon or hepatic flexure, right lumbar colotomy should be done ; but I would not recommend opening the bowel higher than this—that is, either the cæcum or lower end of the ileum—except on emergency. When the disease is in the ascending colon, the cæcum, or at the ileo-cæcal valve, the bowel should be short-circuited by disconnecting the lower end of the ileum, and connecting it again with the large bowel beyond the growth. Short-circuiting may also be done when the hepatic and splenic flexures are involved, as the loose folds of the colon generally readily admit of ascending or descending colon being connected by lateral anastomosis with a part of the transverse colon. A few years ago I tried this, in the case of a young lady living near this town, who had a large growth in the hepatic flexure. She recovered, and was in excellent health for at least a couple of years, during which time, I believe, she thought she was cured. I attributed the slow progress of the disease—for at the time it was thought she had only a few months to live—to the fact that the diseased tract of bowel was thrown out of work, and consequently its blood supply was lessened, and it tended to atrophy—the atrophy probably affecting the tumour as well as the healthy tissue. Of course, short-circuiting is much more pleasant for the patient than colotomy ; but it is also a much more serious operation, and should only be undertaken in favourable cases, except where the only alternative is right iliac colotomy, and then I think it justifiable, in the patient's interests, to run the greater risk of intestinal anastomosis rather than open the cæcum.

The amount of relief afforded by colotomy in cases of cancer of the rectum has often been under discussion, and very different opinions have been expressed. Where serious obstruction exists, or where the growth has ulcerated into the bladder, the value of prompt colotomy admits of no question ; but

there are many other cases in which the discomforts are very great, though the symptoms are not urgent, and it is in these that so much difference of opinion exists. The point at issue is, which is the greater evil—the discomforts due to the growth, or those which may be expected from the artificial anus? I certainly would be the last to recommend colotomy as a routine treatment, for I always excise when possible; but in the case of all those who suffer much pain, tenesmus, and bladder irritation, or other serious inconvenience, due to the growth, and not relieved by local treatment, I would certainly advise colotomy, feeling sure that the risk to life would be very small, and that the discomforts of an artificial anus are much less than they used to be, and are lessening every year, with the steady progress of abdominal surgery.

A CASE ILLUSTRATING (1) THE INFLUENCE OF SKIN CONDITION ON SURGICAL PROCEDURE; AND (2) THE TREATMENT OF ECZEMA BY COUNTER-IRRITATION. By COLIN CAMPBELL, M.R.C.S.

THE influence which the condition of a patient's skin may have on wounds—whether accidentally or scientifically inflicted—is a subject on which I cannot recall any literature. We have all heard of 'good healing flesh' and the reverse; but, since the introduction of perfect cleanliness into surgery, I am told that 'bad healing flesh' is only regarded as an idiosyncrasy of legendary importance.

I don't intend to suggest that 'bad healing flesh' was a phrase ever scientifically employed; but any one of twenty-five years' surgical memory will recall the implied assent of surgeons to the phrase—or perhaps to the expressive word, 'cussedness.' An old friend of mine invariably attributed his failure to secure a happy healing of a wound to 'Divine interposition'!

That wounds heal more readily now is a truism. That the causes which have led to this happy result are not alone Surgical Cleanliness (asepsis), and the use of antiseptics, but also better sanitary surroundings, a more diversified dietary, and an earlier diagnosis of chronic diseases incompatible with surgical procedures, can hardly be denied. Yet, I suggest that 'bad healing flesh' still survives, as an inheritance; and the case I propose to bring before your notice is, I think, a somewhat remarkable example of it. I shall allude to a second case, by way of evidence in support.

I have known H. B., a boy aged 12, all his life. In his infancy I noticed his hard, dry skin, and suggested that glycerine be used freely in his bath. When he began to run about, and ever since, he suffered severely from cracks about his wrists and ankles—indeed, they were more than 'cracks'; deep fissures, rather—between rolls of hard skin.

The 'family diseases' are well worth noticing. He is one of eight brothers and sisters, all living, and varying in age from 20 to 7 years, who, beyond showing a marked receptivity to zymotic diseases, are all strong and healthy. One girl suffered from eczema in infancy, it disappeared immediately after vaccination, and reappeared at 14, as will be noted later.

I am unable to go back further than the grandparents for the 'family diseases,' but even so far shows points of interest.

The *paternal grandmother* was known to me. She had a skin like parchment; she died æt. 72, from cancer of the stomach.

The *maternal grandmother* suffered in early life from eczema, and died of lupus of the face. I have not been able to learn anything of the paternal grandfather. The maternal grandfather is a remarkably healthy man, over 70 years of age.

The *father*, æt. 48, suffers from acute rosaceæ; he is otherwise healthy. The *mother*, æt. 47, is also strong and healthy.

I have omitted one fact, viz., that subsequent to the disappearance of the infantile eczema in the girl above referred to, her skin also became hard and dry, though not nearly to such a marked degree as in the case of her brother H.

To return to the boy. In July 1897 his fingers were severely crushed by machinery. It is unnecessary to detail the injuries: the most severe, however, laid open the first joint of the ring finger of his right hand. In 17 days they were all healed, except for a small scab that had formed over the wound which had opened the joint. This scab was removed; and as the surface beneath was found to be oozing bright water, it was very carefully cleansed, and dressed with lead lotion. The next day the dressings were found saturated with serum; and on their removal, the palmar surface of the hand presented a parboiled appearance, and bright 'water' was almost bubbling from the tiny wound. The scalding fluid had also found its way into the other cicatrices; and although it did not reopen them, it had so loosed the cuticle around them that it was necessary to remove it wholly with scissors and forceps from the palmar surface of three fingers; and then the whole bared surface

was found oozing. This irruption lasted a fortnight (during which the greatest care was necessary to prevent the serum from becoming 'septic' in the puckers of the old cogwheel wounds). And then it slowly subsided.

The same thing exactly had happened in the case of the boy's sister (who had suffered from eczema as a baby). In February 1897 she had her thumb caught in machinery. By the third week it was healed; and then, as in the boy's case, eczema appeared, and spread, and the secretion blistered all the neighbouring parts.

I have mentioned that the first joint of the boy's ring finger was injured from the palmar surface. It was soon evident that a 'Dupuytren's contraction' was in store for him; and when his hand was healed, I recommended a splint being worn by night. But notwithstanding, when he was brought to me a month later, the contraction was well marked, and increasing.

I told his parents that it could only be cured by an operation; and that in all probability an operation would be followed by a renewed outbreak of eczema, but that the deformity would increase, and sooner or later the difficulty would have to be faced.

They decided for prompt measures.

Now, as always, the boy's skin was everywhere rough and hard. Rub it anywhere, and it would desquamate in fine small dust. In the hope of diminishing the liability to another outbreak of eczema, I put him on a month's preparatory 'alterative' treatment, with two objectives in view—(1) to make the blood more healthy; (2) same, as regards the skin. (The idea may be old-fashioned, yet not irrational.)

To carry out the first, I prescribed a vegetable diet (the boy was fond of meat). He was given grapes, apples, etc., and fresh vegetables in abundance. Meat and the 'three s's' (sweets, salts, and sour)s were forbidden. He had plenty of fluids—good milk and good water—and fresh air; and for the skin, he had a warm bath every night, to which either 2 oz. of

lanolin or 8 oz. of glycerine were added; with 4 oz. of carbolic soap; while to soften and render thoroughly 'aseptic' the hand to be operated on, it was twice daily washed with a soap ointment, containing 1 per cent. of mercuric bichloride.

Just before operation the hand felt soft and velvety as an infant's, yet it proved to be as brittle as paper.

The operation was performed, by Hardie's method, on September 17th. It was easily done, the only difficulty being the marked brittleness of the skin, which the sutures cut like paper if tightened. The wound was dressed with dry iodoform gauze, and a light splint applied.

On the second day everything was found soaking wet, and on baring the wound bright serum was found almost *flowing* from it. Again the palmar surface and between the fingers had the 'parboiled' appearance, and all the neighbouring parts had risen in 'blisters.' All this skin was easily removed with a scissors, the bare 'weeping' surface thoroughly cleansed with boracic lotion, and the dressings reapplied.

But the flow continued; everything was wet through with it. It would be wearisome to recount the different medicinal methods adopted during sixteen days (1) to keep the new wound aseptic, and (2) to check the eczema. In the first object I succeeded: not a drop of pus was formed, and the wound healed, whilst it wept. I have no doubt that if that most perfect absorbent, 'moose pappe,' had not been used, the wound would have speedily become septic. But 'moose pappe' is ever thirsty, and drinks up all secretions. Even healthy serum is potential pus—and *one ounce* of 'moose' will absorb a *pint* of it!

I may say, shortly, that lotions exercised no influence on the flow. Sometimes a brisk purgative is very effectual, but it was useless in this case. The skin of the hand up to the wrist 'blistered' two or three times, and the boy became sleepless, and his haggard, worn look showed he was becoming exhausted by the enormous flow. Medication having proved unavailing, I tried the effect of placing the boy's arm and hand on an

inclined plane, the hand being well above the level of his head ; and at the same time a large blister (4 ins. by 4 ins.) was placed over the outer part of the forearm, in the hope of diverting the flow of serum. For a day or two it appeared as if this procedure would have the desired effect, and for so long the hand remained dry, but the blister on the arm rapidly healed, the flow from the hand recommenced, and reblistering failed to ' tap ' the supply.

The dressings were soaked through three or four times a day ; by weighing them dry, before application, and on removal, it was found that in twenty-four hours 23 oz. was exuded, without counting for evaporation !

Just then I met Dr James Barr, and mentioned the case to him. He suggested placing a large blister *between the shoulders*. I did so. Immediately the hand dried up, and in four days all dressings were discontinued.

The points which are probably worth noticing are :—

(a) 1. The curious inheritance of the children—*scleroderma* and cancer from the paternal grandmother, and *eczema* and *lupus* from the maternal grandfather.

2. That neither pathological condition exists in the parents so far.

3. The mutability of the apparently opposite conditions. In the two children it would appear that when you "scratch a *scleroderma* you find an *eczema*."

(b) I would like to inquire whether similar cases have been noticed.

(c) And as to possible methods of preventing outbreak of *eczema*.

(d) Treatment of the *eczema*. The effect of the counter-irritation, as suggested by Dr Barr, was most striking, and I desire to acknowledge my indebtedness to him.

THE EVOLUTION OF METHODS OF SEWAGE DISPOSAL. By HUGH R. JONES, M.A., M.D., D.P.H.,
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FRANK ROBINSON, M.D., Ch.B.

IN view of the importance to this city of the efforts and proposals of the Manchester authorities to deal with their sewage, the writers believe that a resumé of methods of sewage disposal will be of interest, especially as recent experiments in this direction show also the value of the science of bacteriology in its adaptation to modern social requirements.

Naturally, the earliest idea, when the water-carriage system for the removal of sewage was introduced, was to discharge the sewage into running water; and it is possible that at first, as the quantity of sewage was small, natural methods of purification sufficed to obviate nuisance and danger. In the case of towns on the sea-coast, it is credible that direct discharge into the sea may still be satisfactory, provided that certain conditions are observed, the chief being that the discharge shall always be below the level of the water, and that the movement of the sewage be always out to sea, advantage being taken of any known currents to prevent reflux.

A bare statement of the contents of average sewage shows at once why the more general adoption of water-carriage speedily rendered the natural methods of purification insufficient. Added to human excreta are the refuse waters containing waste matters from kitchens and laundries, and the drainage from stables, shippings, and slaughterhouses, and from the streets. It requires no great effort of the imagination to believe the now classic statement of the Rivers Pollution Commissioners, that "there is no river in the United Kingdom long enough to effect the destruction of sewage by oxidation."

The pollution of rivers by sewage soon made itself strongly in evidence: offensive smells, unsightly deposits of sludge, water rendered unfit for drinking purposes either for men or animals, an alleged state of lowered vitality of those in the immediate neighbourhood—these were strong sanitary and æsthetic objections. Add to these the reduced value of property on the river-banks, the injury to the important fishing industry, and the expense of dredging incurred by the silting-up of navigable rivers, and strong reasons are shown for the adoption of other methods for dealing with the sewage.

In an age of antiseptics, it is not surprising that endeavours should have been made to deal with the sewage by adding 'disinfectants,' with the object of preventing the processes of decomposition which gave rise to the nuisance. All kinds of disinfectants (and among them carbolic acid, carbolates and sulphites of lime and magnesia, and chloride of lime) were added to the crude sewage, which was afterwards discharged into running water, but the results were eminently unsatisfactory. Eventually the processes of putrefaction occurred: they were delayed, arrested, but not prevented.

It is only of comparatively recent years that bacteriology has demonstrated that the natural disposal of effete organic matter is by bacteria, as will shortly be considered in connection with recent advances in sewage treatment.

It will be at once recognised that the addition of disinfectants is entirely wrong in principle, as the result is to kill the organisms by which the process can be effected without nuisance, and merely to defer, not to prevent, the inevitable decomposition. According to Dibdin, the only antiseptic which can be commended is permanganate of soda, which, if used in sufficient dilution, is not germicidal, but directly oxidises matters which are actually decomposing. It thus deals effectually with the immediate danger, and does not interfere with the future natural purification.

The most important constituents of sewage are organic matter, chlorides, and phosphoric acid. According to the

Rivers Pollution Commissioners, 100,000 parts of sewage contain on an average 72 parts of dissolved solids, much of which is organic, and nearly 45 parts of suspended matters, of which, roughly, rather less than half is organic and putrescible. By simply allowing the suspended material to subside, might not a clear and satisfactory effluent be obtained? Experience proved that subsidence was only partial, so straining was resorted to; but this proved unsatisfactory, as the dissolved matters in the effluent were found to be fully capable of giving rise to nuisance.

To precipitate the dissolved matters many ingenious plans were contrived, which may be roughly grouped according to the preponderating chemical agent used in each.

Lime was one of the earliest agents employed, either as being essential or supplementary to particular processes, and may be taken as the type, exemplifying the action of all. By coagulating organic matter in solution, and combining with carbonic, phosphoric, and other acids present to form insoluble calcium salts, it was anticipated that lime would throw down a precipitate which would entangle and carry down with it suspended matters during its subsidence. Slaked quicklime or lime as lime water were added, alone or in various processes, in combination with clay, magnesium chloride and tar, blackash waste, phosphates of lime, etc. The results in actual practice fell far short of the theoretical anticipations, with the exception perhaps of the one last named, which Professor Corfield reported was the only precipitation process he knew which complied with the standard of the Rivers Pollution Commissioners. Though in certain of these processes much suspended matter was deposited, yet in others part of it was actually dissolved, and appeared in the effluent. The action on the dissolved matter may be characterised as a 'conspicuous failure.' Varying opinions were expressed on this point; yet when the best was said, the effluent was acknowledged to contain half of the original putrescible material, and was quite unfit for discharge into streams. Both the sludge and effluent

from lime processes as a whole were found liable to decomposition.

Salts of alum and iron were added to complete the deposition of dissolved organic matter, on the same principle as the lime, while the flocculent hydrates formed would bring down solids in suspension mechanically. They were also used independently of lime, and in combination with various precipitants, as in the A B C process, but the effluent in all cases was eminently unsatisfactory. Dibdin and Duprè were of opinion that of the dissolved organic matter, alum removed 5 per cent. only, and iron and lime removed none, while it was actually increased by the solution of suspended matter by both alum and iron, if in excess. The use of these salts, "even in preposterous quantities, will not materially reduce the dissolved impurities in sewage-polluted waters."

From the experience of these and other precipitation processes three facts stood out strongly—the imperfect removal of the suspended solids, the slight influence on those dissolved, and the enormous amount of sludge deposited. A common stumbling-block was the attempt to make a profit out of the precipitate, as the sludge was supposed to have great manurial value, which, as a rule, was far from being obtained. This result appears only natural, as the ammonia, and usually the phosphates, escape in the effluent, and the valuable manuring materials are lost.

The lack of success attending chemical precipitation caused it to be supplemented or even displaced by filtration schemes. Peat, charcoal, porous carbon, and polarite (after the addition of ferrozone)—these were used as filtering media, and were found inefficient and costly. Upward filtration through sand or gravel was found most unsatisfactory when used for London sewage, the effluent in neither case being fit for discharge into a stream. Upward filtration does not permit of aeration of the filter, which is essential to purification of sewage by filtration.

After certain chemical processes, filtration through land was resorted to, but the filtrate was still unsatisfactory, and the

monetary loss considerable. Probably greater attention was paid to the chemical part of the process than to the suitability of the soil and the fulfilment of the conditions necessary for the efficiency of a filter.

For very many years the application of sewage to land was practised from purely commercial motives, with the sole object of manuring the soil. As a matter of experience, it was found that this was a satisfactory method of producing a good effluent; and thus, long before the bacteriological reasons were suspected, a method of sewage disposal was practised depending upon natural biological processes.

As defined by the Royal Commission on Metropolitan Sewage Discharge, "broad irrigation or sewage farming means the distribution of sewage over a large surface of agricultural ground, having in view a maximum growth of vegetation (consistently with due purification) for the amount of sewage supplied." All kinds of land have been converted for the purpose, including meadowland, porous gravel, peat, clay, and even sea-sand, but the best results have been obtained from friable loam. The land is laid out in slopes, and the sewage (preferably after the grosser matters have been deposited or screened) is conducted on to the surface by open channels of cement, iron, etc. The soil is thus irrigated at suitable intervals, it being essential that the sewage shall percolate through it from above, ensuring the contact of the sewage with the roots of the crops, to the benefit of both. The effluent liquid is conducted away by drainage-pipes laid at a depth of 6 feet, and flows into the nearest stream. One acre of land is usually provided for every hundred people.

Very favourable opinions have been pronounced by various bodies constituted to examine into this method of sewage disposal, opinions mainly referring to three points—the efficiency of the purification of the sewage, the financial aspect of the system, and the influence on the public health. The British Association Committee found that only one-tenth of the nitrogenous matter originally present in the sewage remained in the

effluent, and there was no suspended matter—obviously a most satisfactory result. All kinds of crops have been successfully raised, which have been disposed of, as a rule, with great ease (anticipated prejudice not being realised), and in some cases the farm has more than paid its way. It should always be remembered, however, that the primary object is the rapid disposal of the sewage without nuisance or danger. At times the commercial instinct has unduly influenced the conduct of the farm, with unsatisfactory results as regards sewage purification. Any nuisance or injury to health has been shown to arise from mismanagement where unstrained sewage has accumulated in carriers of improper construction. The great majority of farms have given rise to no complaint, even with regard to those infectious diseases where specific contagion is carried by the excreta, and in some cases a reduced death-rate has followed the establishment of a sewage farm.

Especially in the case of large towns, strong reasons have stood in the way of adopting broad irrigation. The difficulty of acquiring land in the neighbourhood, the conformation of the land, the excessive capital and labour required—all these have proved great drawbacks. A method which would need less land was desired, and was found in intermittent downward filtration, the principle being precisely that of the sewage farm, but the minimum of land for the purpose was sought, and the produce was regarded as a minor consideration. A piece of land with a proper fall and a porous soil is thoroughly underdrained and divided into four parts, on to each of which sewage is run for six hours out of the twenty-four. During the resting period air enters the soil as the sewage sinks through it, and the intermittent oxygenation so essential for the life processes of the all-important bacteria is thus ensured. The amount of sewage which can be dealt with in this manner varies greatly with its composition, but with a porous soil 100,000 gallons (representing 2000 to 3000 people) can be dealt with daily on one acre of land, which is many times the corresponding figure on a sewage farm. Thus, though the cost of

preparation is proportionally greater, yet an infinitely larger amount of sewage is subsequently dealt with; and as the land is less in extent, there is a lessened liability to nuisance in the event of any error in management.

It has at last been recognised that " whenever and wherever there is decomposition of organic matter, whether it be the case of a herb or an oak, of a worm or a whale, the work is exclusively done by infinitely small organisms," *i.e.*, bacteria. The bacteria by which the purification of sewage is naturally effected are present in the sewage itself, and it has been shown experimentally that they exist also in the superficial layers of the soil to a depth of four or five feet. They belong to both the aerobic and the anaerobic groups. The aerobic, the nitrifying organisms, are chiefly found nearer the surface of the soil; and if oxygen be freely present, they destroy organic matter in an inoffensive manner, forming ammonia, nitrites, and nitrates. Otherwise, the anaerobic bacteria which tend to putrefaction come into play: these are found chiefly at a deeper level of the soil, and are more resistant to the action of antiseptics than the organisms of nitrification. The fallacy of the so-called disinfectant methods is thus obvious: by killing the organisms by which an inoffensive purification may be effected, the field is left clear for putrefaction, thus ensuring the nuisance which it was desired to avoid. Partial deodorisation, says Dibbin, is easy, but true disinfection is only obtained by great dilution with highly oxygenated water (by which the rapid nitrification of organic matter by aerobic bacteria is encouraged, and which is impracticable), or by filtration through the soil, or by direct bacteriological treatment.

The changes that occur in sewage when treated by land filtration may be thus classified:—

1. There is a mechanical arrest of the grosser particles on the surface, influenced by the porosity of the soil.
2. There is a chemical interchange between the salts of the soil and those of the sewage, lime salts especially being necessary as a base for the nitrates.

3. A biological process of nitrification occurs, and is influenced by the porosity of the soil, as affording a greater or less extent of surface for the growth of the bacteria, and also as regulating the amount of air contained.

During the last decade the stimulus of the growing science of bacteriology has resulted in most important series of experiments, conducted on strictly scientific lines. They have had for their object the disposal of sewage by purely bacteriological processes, and have chiefly aimed at ascertaining what materials are best suited for the purpose, and what rate of flow of the sewage through the filtering medium gives an effluent which shall be at all times satisfactory.

The experiments of the State Board of Health of Massachusetts were conducted from 1887 to 1890. A number of cypress tanks, 6 feet high and about 17 feet in diameter, drained from below into measuring tanks, contained various filtering media, including gravel-stones, coarse and fine sands, peat, loam, and clay. In every case there was a substratum of pebbles, gravel, and coarse sand (from below upwards). Measured volumes of sewage were applied intermittently to these tanks; and as the area of each was known to be $\frac{1}{200}$ of an acre, the results obtained could be judged of with precision, and were, very briefly, as follows:—

“With the gravels and sands purification by nitrification takes place in all when the quantity of sewage is adapted to their ability, and the surface is not allowed to become clogged by organic matter, to the exclusion of air.”

Fine soils gave an excellent effluent with small quantities of sewage, but were so slow in action that practicable working quantities were not purified.

Peat proved impracticable, being too impervious.

Gravel-stones removed 97 per cent. of the organic matter and 99 per cent. of the bacteria—an eminently satisfactory result. “Very slow motion of very thin films of liquid over the surface of particles having spaces between them sufficient to allow air to be continually in contact with the films of

liquid"—these are conditions essential to the process, and are well exemplified with these materials.

The necessary aerobic bacteria were found to be present in the sewage at all seasons: the various filtering media employed represent an endeavour to ascertain the conditions most favourable for their growth, the food supplied in the sewage being transformed by bacterial activity into harmless and inoffensive soluble forms.

Sewage at the rate of 60,000 gallons per acre per day through sand appears to have been the largest amount treated satisfactorily for an indefinite period.

The experiments conducted by Mr Dibdin for the London County Council at Barking Creek elaborated the methods just described. A series of experiments was first conducted with small filters, the object held in view being "the attainment of the highest degree of speed consistent with such purification as would remove all objectionable characters, such as odour, colour, and liability to putrefaction." The tanks were of the same area as at Massachusetts, and were filled respectively with burnt ballast (clay), pea ballast (shingle), coke breeze (coke fragments, $\frac{1}{2}$ inch in diameter), sand, and a proprietary material.

The amount of oxidisable material removed by these media was—

42	per cent.	in the case of	sand.
43	"	"	" burnt ballast.
52	"	"	" pea ballast.
61	"	"	" proprietary material.
62	"	"	" coke breeze.

Sand proved too fine for efficient purification, and burnt ballast too coarse. Coke breeze not only gave the best results, but was the cheapest.

The second series of experiment was conducted on more practicable working lines. The material used was coke breeze to a depth of 3 feet extending over an area of one acre,

and covered by 3 inches of gravel to prevent the coke from floating. The filter was underdrained, and could be filled and emptied at will. The tank was worked eight hours each day, and six days in each week, and by gradual increase of the amount $1\frac{1}{6}$ million gallons of sewage were eventually treated daily on one acre.

Preliminary experiments as to rapidity of filtration showed the absolute necessity for rest and aeration of the beds, as they became putrid when overworked, but speedily recovered during a period of inaction.

Purification during 1894-5, including the well-remembered period of hard frost, varied from 75 to 81 per cent. The effluent showed no signs of putrefaction however long kept, and fish lived in it at the point of discharge. "The experiments, taken as a whole, show that sewage, especially if previously clarified by precipitation, may be purified to any desired degree. . . . If a reduction of 75 per cent. in the oxidisable organic matters in solution be considered as sufficient, the quantity that can be treated per diem on one acre of coke breeze is 1,000,000 gallons, which gives a required area for the treatment of the whole of the metropolitan sewage of 180 acres only."

The Urban District Council of Sutton in Surrey have this process in operation for their sewage, and consider their results most satisfactory. The best effluent is obtained from coke breeze, the purification obtained being 74 per cent.

A further development has been brought about at Sutton, by which a still purer effluent has been obtained. A bacteria tank is constructed (at an estimated cost of 3d. per square foot) by digging out clay to a depth of 3 feet, burning it, and returning it. It is then inoculated with nitrifying organisms, in order to start the process more rapidly. The crude sewage is run on to it after simple screening, and there is no previous chemical precipitation of the suspended organic matter.

Sixty-six per cent. of the oxidisable material and 95 per

gent. of the suspended matter is removed by the tank, and the filtrate is then passed through a bed of coke breeze and gravel. This results in a final effluent containing only 13·5 per cent. of the original oxidisable material and practically no suspended matter, and is quite sweet, and keeps well. Sewage has been treated at the rate of 773,000 gallons per acre per day with these results. There is practically no sludge question to be dealt with, and the great economy is obvious.

A simplification of these processes is now in operation at Exeter, and is known as the 'septic tank' method. The crude sewage, instead of being run on to burnt ballast, flows slowly through a covered tank capable of holding eighteen hours' flow of sewage. By the action of the bacteria present in the tank, and subsequently on coke breeze beds as at Sutton, an effluent is obtained with practically no suspended matter, and with oxidisable matter diminished by more than 80 per cent., and which is found to be entirely satisfactory. Messrs Pearmain and Moor, in their report on the process, suggest that a fixed quantity of nitrates in the effluent should be insisted upon as a guarantee of true purification. As at Sutton, there is no sludge difficulty, the deposited matters passing into solution as purification goes on.

Reviewing the various processes touched upon in this paper, there can be little doubt as to the superiority of the group which includes the use of land and the more recent methods of filtration. Apart from the efficiency of purification, which is beyond all comparison, it appears to us that a decided preference should be given to those processes which are based on Nature's methods. Discriminating further between land and artificial filtration, we cannot do better than summarise briefly the conclusions of Messrs Pearmain and Moor as to the advantages of artificial filter-beds. Their principal points are, that there is a comparatively small amount of space required; there is no fear of nuisance from fouling; purification is most complete; the process is automatic, and but little reliance on the individual judgment of attendants is necessitated; while

there is no consideration of crops to interfere with efficient performance of the real object in view.

When to these considerations is added Dibdin's estimate that if half the sewage of this country were treated as at Sutton a sum of £60,000,000 sterling would be saved, the writers consider that a strong case is made out for the disposal of sewage by bacteriological methods.

FOREIGN BODIES AND THE USE OF X-RAYS. By
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Hospital, Liverpool.*

THERE can be no doubt that one of the chief uses of the X-rays is the diagnosis of the presence or not of suspected foreign bodies situated somewhere in the human body, and the more or less accurate localisation of these foreign bodies when they are found to be present. In this paper I intend to give the results, quote some of the more instructive cases, and point out the conclusions arrived at from my personal experience of the cases which have come under my notice, from June 1896 down to the present time.

These in all number eighty:—

- (1) Foreign bodies suspected in the hand or wrist—32.
- (2) " " in the foot—10.
- (3) " " of having been swallowed—12.
- (4) " " in the arm—3.
- (5) " " in the leg—4.
- (6) " " in the head—3.
- (7) " " in the eyes—7.
- (8) Suspected stones in the ureter or kidneys—6.
- (9) The location of a Murphy's button—3.

The hand and wrist are seemingly the most common sites for foreign bodies, this being doubtless due to the ease with which needles run into this part and are broken off.

Of the 32 cases examined, 18 proved to have pieces of needle either in the palm of the hand or in the finger or thumb. Four had bullets or shot, 1 a piece of glass, 1 a piece of an iron table-fork, 1 a large part of a hat-pin, 1 several brass nails, and 6 no foreign body at all. The latter class, viz., those where nothing is present, are important:

nearly all are women, and they are generally hysterical: they complain of pain, and are certain that at some date, usually far in the past, a pin or a needle had run into the hand and had stayed there. To be able to take a radiograph and demonstrate to these people the absence of any such thing is to cure them of their ailment. On the other hand, many

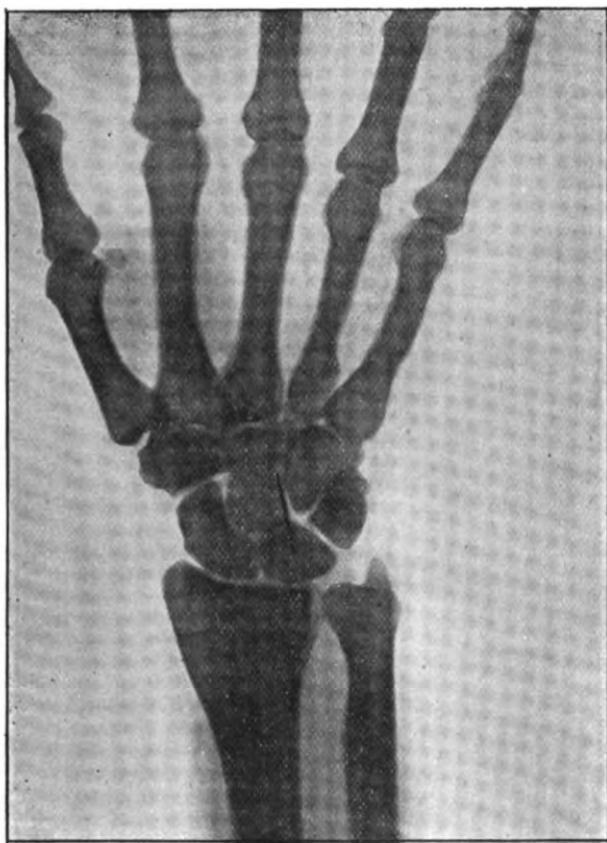


FIG. 1.—Hat-pin in wrist. First position.

patients complaining of pain in this manner have been considered as manifesting hysteria, and to be able to demonstrate the presence of a foreign body is most important.

One such case which came under my notice, in which four broken pieces of needle were seen in and around a painful

knee, had been treated for some two years as suffering from hysteria, a fact which had caused much mental anguish to the young lady in question.

These pieces of needle in the hand, especially when in the palm, are sometimes exceedingly difficult to remove, even after a radiograph has been taken; and if a radiograph has been taken some time before the day of operation, I would caution

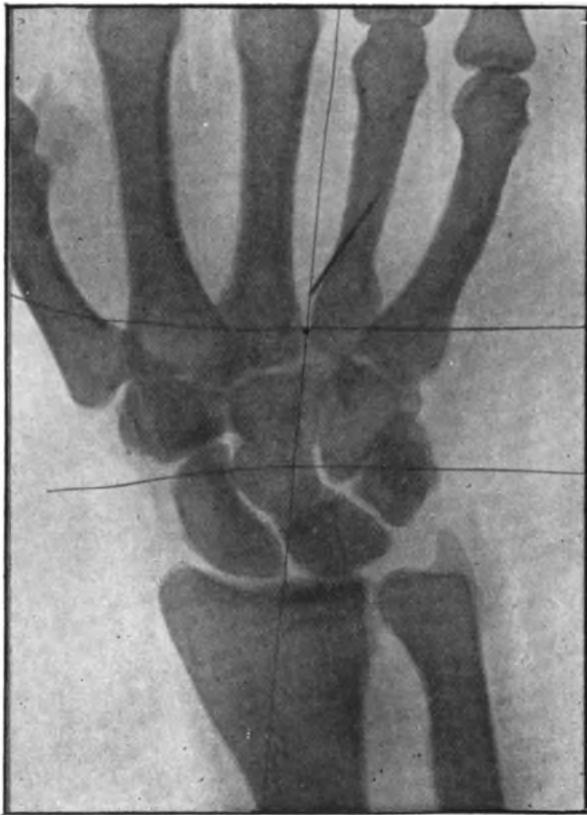


FIG. 2.—Hat-pin in hand. Second position. Wires for localisation.

the operator to always have the hand re-examined (by means of the screen) immediately prior to operating, as in several instances it has happened that in the interval between taking the radiograph and the operation, the bit of needle has moved. In one such case the foreign body, a large piece of hat-pin, had

moved from a position in front of the wrist to a second position well up in the palm, and was then, at a second operation, discovered loose in the sheath of the flexor tendon of the ring finger. (See diagrams Nos. 1 and 2.)

Many elaborate methods of locating exactly the size and position of these foreign bodies have been used: as a rule, for



FIG. 3.—Piece of needle in wrist. To show localisation by wires.

the hand they are not necessary. It is usually easy to be sure on which side of the bone the foreign body is situated, and then a simple radiograph is all that is wanted. By stretching a few wires at right angles to one another in a frame, making squares of about half an inch, painting these with cochineal and placing them between the hand and the plate, we get

shadows of them on the plate, and red marks corresponding to the shadows on the hand; then, by comparing the red marks on the hand with the shadows on the plate, it is easy to mark the exact line of the foreign body. This plan has answered admirably in many cases (diagram No. 3).

I have seen difficulties arise from the manner in making the incision: with radiographs before them, some surgeons have preferred to cut down in the line of the piece of needle, others on the supposed position of one end. In nearly all such operations, great trouble and much time has been uselessly expended. If judicious, I should always advise the incision to be made as nearly at right angles to the length of the needle as can be managed; then, when the needle is cut down on, if any difficulty arises in freeing one end, it can easily be removed by cutting it with nippers, and drawing out each piece separately.

The bullet cases call for no special comment: in one, the man died from other injuries before the bullet was removed; in two others, the bullets had been in for some time, and were allowed to remain. In the last, the shot, a large one, was lying on the palmar aspect of the finger, right against the bone, it had already been searched for and not found, and it could not be felt, and the surgeon thought it must have fallen out; however, an X-ray proved its presence, and it was at once, through the original wound, removed with a pair of forceps. (See diagrams 4 and 5.)

In the case of the glass (diagram No. 6), this had been in the boy's hand for three years, and was causing a great deal of pain. It was easily removed, and proved to be a mere shell of glass, flat, about an eighth of an inch in length, and not thicker than a sheet of notepaper; nevertheless, it showed quite plainly.

The bit of fork in the finger was very interesting. The boy, a lad of 16 years of age, had a painful enlarged finger of some three months' duration, and gave the history that it followed after a wound from a table-fork. The surgeon who

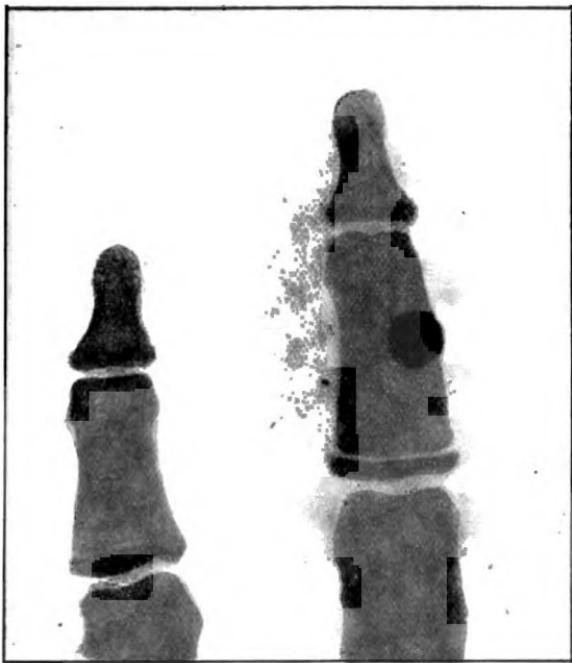


FIG. 4.—Bullet in finger. Antero-posterior view.



FIG. 5.—Bullet in finger. Side view.

sent the case to me believed that no foreign body was present, and certainly none could be felt. Radiography proved that a bit of fork was embedded, and buried completely in the bone of the middle phalanx (diagrams Nos. 7 and 8). It was cut down upon and removed. This is an example of a case where



FIG. 6.—Piece of glass in the hand.

the presence of a foreign body would probably have never been made out had it not been for the X-rays.

In making a definite diagnosis of the presence or not of bits of needle, or such-like, one other point deserves notice. The diagnosis of absence of any foreign body like this should never be made upon the evidence of the screen alone : it has several times occurred to me, even with the screen well lighted up, to be unable to see the shadow of a needle which was after-

wards clearly shown on the plate. Of course this has generally been the case when the piece of needle has been exceedingly small, and lying against the bone. The screen is all that is necessary for a positive diagnosis, but it is not wise to rely upon it entirely for negative evidence. Again, some plates



FIG. 7.—Piece of iron fork embedded in the bone of a phalanx.
Antero-posterior view.

may be misleading; and before giving a definite negative opinion, I advise that two plates should be exposed, and if possible, at different angles to the suspected part. Thus, twice I have exposed plates for needles, seen none, and yet proved the presence of a needle on a second plate. In one of

these the piece of needle, about half an inch in length, was in the wrist ; the wrist was laid flat on the plate, which, when developed, showed nothing except a suspicious spot, not conclusive, though, as spots are common on plates ; a second radiograph was taken with the ulnar side of the wrist on plate, and then the whole length of needle was plainly seen. It was lying straight in, at right angles to the wrist bones, and this accounted for it showing merely as a spot in the first radiograph. The other case was that of a man who gave a

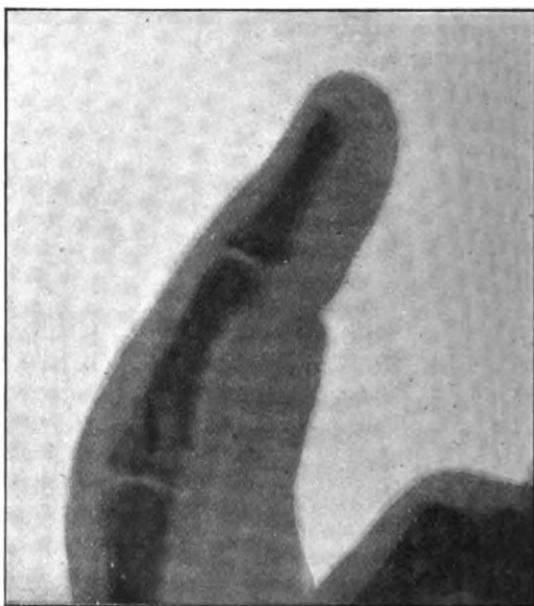


FIG. 8.—Piece of iron fork in the bone of a phalanx.

somewhat peculiar history. He came to the Southern Hospital, saying that the night previously, when slightly intoxicated, the conversation had turned on the subject of people being able to run pins and needles right into their legs without pain. He said that he wished to see if he was a 'human pincushion,' so he ran a large needle through his clothes and into his thigh, then when he looked for the needle he could not find it. His tale was looked on with some suspicion, but to make sure the X-rays were used. The first plate (diagram No. 9) was

exposed with the front of the thigh lying on the plate, and it showed nothing, not even a suspicious dot, and yet the plate was a very good one. A second was then exposed with the inner side of the thigh on the plate, and then the whole needle, about two inches long, was seen lying deep in the muscles, with the point sticking in the bone (diagram No. 10).



FIG. 9.—Antero-posterior view of adult thigh. The needle does not show.

Of suspected foreign bodies in the arm, only two cases have presented themselves: in one, nothing proved to be present; in the other, a large piece of needle was found lying across the front of the lower part of the radius and ulna. The woman refused to have it removed, but no special difficulty ought to have been encountered in an operation for its removal.

Turning to the foot and leg, we have had to deal with 14 cases in all, 10 of them being suspected foreign bodies in the foot; in five, nothing was found, and these call for no further comment. Of the other five, in two, bits of needle were situated beneath the heel. In one of these an operation had been performed without success, but after the

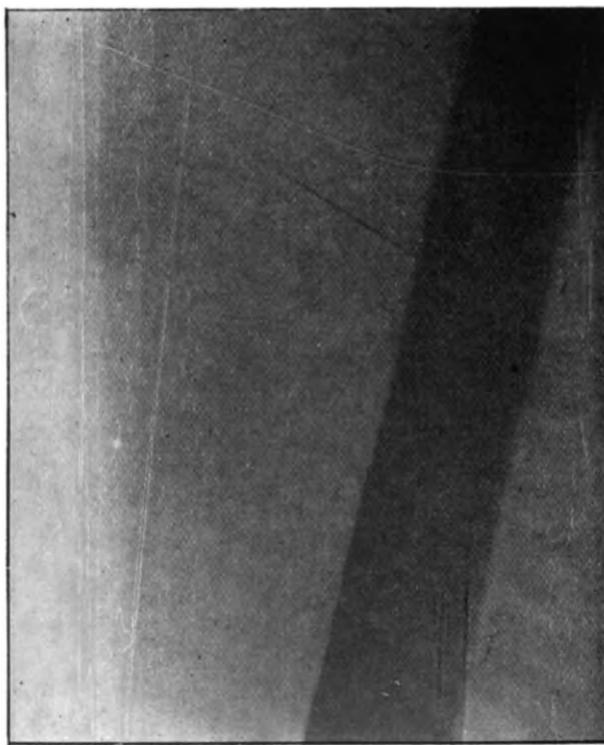


FIG. 10.—Side view of adult thigh. Needle embedded for one day.

radiograph was taken the needle was easily removed. In this case about half an inch of the needle was situated with the point upwards at right angles to the sole of the foot, and consequently caused much pain. In the other, the piece of needle had been in the foot for some years, and caused no pain. The explanation of this was, that it was found to be lying flat against the under surface of the os calcis. Inter-

ference was not advised. Of the other three cases, in two the bits of needle were in the sole of the foot, and in one of them the needle had been broken in two pieces in the foot. The last case was more interesting. The patient, a lady, complained of pain at the metatarso-phalangeal joint of the big toe, and gave a history of a needle having run into the foot



FIG. 11.—Two bits of a needle in a foot.

five years previously. There had been no pain until quite recently.

Here, again, the needle had been broken into two pieces: neither was more than a quarter of an inch in length, and they seemed to be situated close against the joint (diagram No. 11).

One was removed by operation; the other could not be

found. Later on, the pain still continuing, the second piece was more accurately localised, and removed at a second operation.

Here we might point out that in all probability this lady would have been considered as suffering from hysteria in the pre-X-ray days ; and supposing a surgeon had cut down and found one piece, certainly he would have been satisfied with the result, and probably no idea of the second piece would have been entertained ; then the continuance of pain would have been considered as either hysterical, or as due to the operation scar.

Four times foreign bodies have been located in different parts of the legs above the ankle. In one, that of a child 6 years of age, no difficulty was met with in locating and removing a piece of needle buried in the leg just above the ankle joint for six weeks, and which was sticking into the fibula. In another case, that of the 'human pincushion' previously referred to, a whole needle was seen buried in the muscles of the thigh. Operation was not advised, as the needle was giving rise to no trouble.

A third case was that of a young lady, and it showed some of the mistakes made when radiography was first practised. Before I saw the case, from a side view of the knee a piece of needle was seen, and it was cut down upon, only unfortunately on the wrong side of the joint, a second antero-posterior view not having been obtained to verify on which side the needle lay ; of course the foreign body was not found, and as a result of this operation the knee, the joint having been opened, became very painful, and partially fixed by adhesions. In March 1897 I had an opportunity of taking a radiograph of the knee, and then found three bits of needle, two evidently buried in the bone of the internal condyle of the femur, whilst the third lay at the back and outer side of the joint. The adhesions in the knee were broken down, and the patient has recovered with a perfectly sound, painless joint, and with the pieces of needle left where they were, and causing no trouble.

In the fourth case, a revolver bullet was located deep in the muscles of the inner side of the thigh of an adult, but he died from other injuries before any attempt was made at removal.

The head and eyes have been examined for the presence or otherwise of foreign bodies in 10 cases. The absence of a supposed needle in the face was proved in one case. In two other cases where men had shot themselves with revolvers in the head, in one we could not find the bullet, whilst in the second the radiograph showed the bullet lying beneath the base of the skull, it not having entered the cranial cavity.

The eye cases are of great interest; and from my experience in this class of case, I feel justified in definitely deciding the presence or otherwise of shots, bits of metal, etc. The first successful case examined was that of a youth shot in the eye with a No. 5 pellet a month previously. The radiograph showed the shot far back in the orbit, and it had probably passed through, and out of, the eye itself. In three other cases the presence of bits of metal in the eye was plainly shown, and in one of these cases the piece was very minute. Diagram No. 12 is a radiograph showing one of these foreign bodies situated in the anterior part of the eye, and this was afterwards removed. It proved to be a flat piece of steel, and is shown in profile in the radiograph. In the remaining three cases where the eye had been wounded, no trace of any foreign body was seen; and in two of these, one was certainly quite justified in giving a positive opinion on this point. In taking radiographs for this purpose the patient lies down with the head on the plate, the affected side being nearest the plate, and the rays are directed backwards and downwards through the nose and the wounded eye, and not directly through the head from side to side, an exposure of five minutes being ample.

We next come to the abdominal cases, and these give the greatest difficulty in adults, and especially with stout patients; in fact, with very stout patients it is almost, if not quite, impossible to get any satisfactory result; and this is certainly

the fact with regard to kidney cases. Three times I have looked for Murphy's buttons, twice without success, but very probably the button had already been passed. In the third case the button was plainly demonstrated lying against the sacrum, and was passed two days afterwards. Long exposures are necessary for these cases, which are taken with the patients



FIG. 12.—Piece of steel in the eye.

lying on their backs on the plates, and I strongly advise the use of large plates, 18 by 16 inches: these practically take in the whole abdomen and pelvis, and all the landmarks are plainly seen.

Six times I have endeavoured to use the X-rays for suspected stone in the kidney or ureter, with failure in four. In the other two, doubtful shadows were seen, but the results

have not been verified; but, granted that the result is a good one, these doubtful shadows on one side of the vertebræ, and not on the other, and on the suspected side, and in the region of the kidney, are strong presumptive evidence of the presence of a stone or deposit. The negative evidence is quite valueless, as so many of these stones are very transparent to the rays, and so could not possibly be shown.

The last class of case I have had to deal with is that of swallowed foreign bodies. My cases number 12; the first, that of a lady who thought she had a pin sticking in her throat. A beautiful side view of the neck was obtained, showing all the cervical vertebræ, the hyoid bone, the cavity of the larynx and trachea, but no pin, and it is quite certain that none was present.

The abdomen of a child was examined, because thickening was felt over the appendix, and the medical man in charge thought something might have been swallowed. Here, again, the X-rays proved the absence of any foreign body which could have been shown.

In the case of another child, who was supposed to have swallowed a metal trouser-button, the button was plainly seen low down in the pelvis. In three cases I have been asked to localise false teeth said to have been swallowed: in one case the lady said they had been inside her for about two years, and complained of pain in the chest; needless to say, no teeth were found. In the second case, the oesophagus and stomach were examined for a small vulcanite plate and two teeth. Nothing was discovered, but the patient passed the teeth next day, and very possibly they had already passed from the stomach when the examination was made. The third case was that of a man 56 years of age, who had swallowed a large plate two days previously. Here there were obvious symptoms of the plate being high up in the throat, and by means of the screen it was seen to be lying behind the larynx, just at the entrance to the oesophagus; and, with considerable difficulty, it was extracted through the mouth.

Six cases were brought to me with histories of swallowing coins, which had never been found afterwards. In two, both with doubtful histories, no shadow of a coin was obtained ; in the other four, the coins were seen on the screen, radiographed, and removed. One case, that of a boy $3\frac{1}{2}$ years of age, examined as early as October 1896, had a very doubtful history. The only symptoms of anything wrong were con-

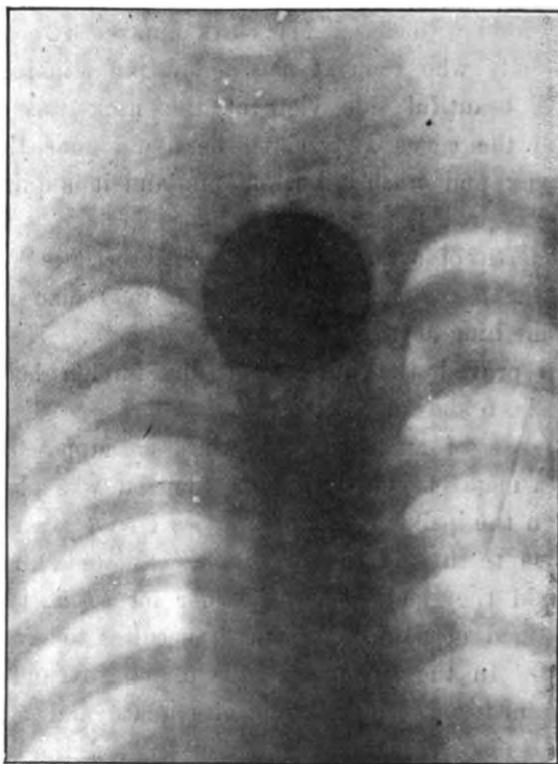


FIG. 13.—Penny in œsophagus.

stant cough, expectoration, and gradual wasting. He was being treated for tubercular disease of the lungs, with involvement of the mediastinal glands. With a 6-inch coil and small tube, a distinct shadow of a foreign body was seen behind the upper end of the sternum. It was removed, and proved to be a halfpenny, which had been stuck in the

œsophagus for thirteen months. The boy made a complete recovery, rapidly losing his cough, and putting on weight. It seems probable that his life was saved by the use of the X-rays. Of the other cases, in one, a child of $2\frac{1}{2}$ years of age, a halfpenny had been swallowed for five days; it was easily located, and removed from behind the larynx. In another, a girl aged $4\frac{1}{2}$ years, sent to me from Wigan, a half-penny was discovered in the œsophagus, behind the upper end of the sternum, and had been there for six months; again there was no difficulty in its removal. The last of the series, a boy aged 12 years, was said to have swallowed a penny three months previously. He had no symptoms beyond slight cough, and occasional difficulty in swallowing large mouthfuls of half-chewed food. Several times bougies, etc., had been passed into the stomach and withdrawn, and a definite opinion had been given that no coin could possibly be in the throat. However, the coin was seen, again at the usual site, viz., behind the upper end of the sternum (diagram No. 13). I removed it without any difficulty, and without an anaesthetic, with an ordinary coin-catcher. The apparatus used for all the above cases has been an Apps-Newton coil, with either a 6- or 10-inch spark, worked from an accumulator, and the tubes, generally speaking, supplied by Messrs Newton & Co.

As regards the times of exposure, in the earlier cases this was generally somewhat prolonged, but lately I have been able to reduce the time very appreciably. Diagram No. 14 shows an excellent radiograph of a needle in the hand, the exposure being fifteen seconds, with a 10-inch coil, and equally good results can be obtained with even five seconds. Foreign bodies in the limbs can be radiographed in from thirty seconds to two minutes, according to the thickness of the parts, and chest cases in from three to five minutes. The abdomen still presents great difficulties, and to get good results the exposures here must be more prolonged.

I do not think that it is always advisable to remove bodies such as small bits of needle, simply because their presence is

demonstrated. The operation for removal often involves deep dissection, especially if in the palm of the hand, and is by no means without risk, and it seems to me that in certain positions it would sometimes be wiser to wait and see if, after settling down, any pain or inconvenience is caused.



FIG. 14.—Hand with piece of needle embedded. Taken with a 10-inch coil.
Exposure 15 seconds.

There will be no more difficulty in removing the foreign body afterwards, if necessary ; and in the meanwhile, no harm will have been done by waiting.

It is quite well known that pieces of needle often remain

in the human body for years without causing the slightest trouble of any kind.

All cases giving a history of having swallowed foreign bodies, such as coins or a plate of false teeth, ought to be radiographed without delay. Their presence or absence in the oesophagus, a most dangerous part, can be certainly and easily demonstrated, and their removal, if present, is much facilitated.

In the case of teeth, the position, shape, and question of hooks, etc., may in some cases be verified, and then would be a great help in the consideration of the method best adapted for removal.

With injuries to the eyes, certainly no attempt ought to be now made to discover the presence or otherwise of a foreign body until the patient has been subjected to the X-rays.

In many such cases the absence of any such foreign body could be made certain, and the eye saved from unnecessary probing; whilst, when present, the radiograph gives a fair indication of the size, nature, and position of the foreign body; and in some cases its almost exact position can be localised.

With regard to the danger of using X-rays in producing dermatitis and other inflammatory conditions, I think that it is very much exaggerated. I have now examined between 600 and 700 cases, in many of which repeated exposures have been made with tubes close and far off from the skin, with the platinum discs often kept bright red-hot, and yet I have never seen any injuries result from their use.

PRACTICAL GYNÆCOLOGY. By WILLIAM ALEXANDER,
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Workhouse Hospitals, Liverpool.*

(Continued from page 21.)

CHAPTER IV.—THE OPERATION OF SHORTENING THE ROUND
LIGAMENTS. PRACTICAL HINTS, ULTIMATE RESULTS, AND
MEDICAL OPINIONS AS TO THE VALUE OF THE OPERATION.

1st, *In all cases suitable for operation, the uterus must be capable of reduction, before operation, to such a position that its long axis is parallel to the upper surfaces of the bodies of the pubic bones.* Anything short of this amount of reduction renders success problematical, although not impossible; for in some unpromising cases of my own, where the uterus, at the end of the operation, was somewhat retroverted, through adhesions probably, the position improved during the healing of the wound, and a good result ensued. In a few others where the same condition was met with at the end of the operation, the uterus fell still further back, the ligaments yielding to the weight of the uterus and to the pressure of the abdominal viscera, and a Hodge was necessary permanently afterwards to maintain what improvement had been gained.

2nd, The best cases are those where the displacement is uncomplicated with any other lesion. If there be a prolapsed painful ovary, evidence or suspicion of chronic inflammatory or ovarian or tube disease, the operation may be done on the strong probability that such complication may be relieved by the operation, either directly through the influence of the improved position of the uterus upon its circulation, and upon that of the adjacent organs, or indirectly through the influence of rest upon all the pelvic viscera during convalescence from the operation. In such cases, however, it should be understood that a

minor operation is only done in the hope and belief that thereby a more serious operation may become unnecessary. We can place the uterus permanently in position by shortening the round ligaments, but whether all the symptoms will disappear in consequence is for the future to determine. This should always be clearly understood by the patient and her friends.

3rd. All acute or sub-acute inflammatory pelvic disturbances should be subdued before operation. Rest and time, with hygienic and dietetic treatment (the rest being complete at the periods), are, according to my experience, the most valuable agents. Warm antiseptic douches, glycerine pledges, blisters, mercurial oleates in very mild forms applied to the groin, are all of use in hastening resolution; and it is astonishing how the uterus will occasionally recover its position as the inflammatory thickening disappears,—so much so, that in some cases it becomes unnecessary to perform the proposed operation. When we eliminate such cases from those where adhesions prevent the shortening of the round ligament, the remainder, where chronic adhesions entirely and permanently contra-indicate the operation, are, in my experience, extremely small in number, although they seem to loom large in the experience of other gynæcologists. In such cases the adhesions may be forcibly broken down by manipulation under chloroform, a stem and Hodge introduced; and when the inflammatory disturbance so produced has disappeared, the operation can be safely performed. In most of these cases, however, an exploratory incision, vaginal or through the abdominal wall, will show the necessity for a quite different operation. In 95 per cent. of retroflexed uteri coming under my observation, the round operation is capable of being performed; and I do not regard the cobweb adhesions that some gynæcologists talk about,—even strong adhesions will gradually yield if the uterus be so placed at the time of operation as to have all the abdominal forces in favour of the ligaments, and against the adhesions.

4th. The operation is only performed where sufficient cause exists to justify anæsthesia, the sacrifice of a month of time

spent in rest in bed or on the sofa, and the endurance of a minor cutting operation. Dr Kellog writes me that he has performed the operation in America with cocaine, the patient reading the newspaper and chatting to him while operating, but it would not be advisable to try that anaesthetic in this country. It only shows how comparatively trivial the operation is. The prolonged rest is not of much moment in suitable cases, as these patients generally lose far more time than a month or six weeks every year, through the infirmities produced by periodical congestions.

5th, A sterile woman, eager to have children, although she may have no symptoms of displacement, may have the operation performed. A woman to whom pessaries are a nuisance, requiring frequent attention, may have the operation done to free her from their use; on the other hand, where a pessary relieves the patient completely and for long periods of time, it would be inadvisable to operate unless the mental worry due to exaggerated thoughts of her condition calls for relief.

6th, Worn-out, elderly patients, of lax fibre and low vitality, either excessively thin or loaded with adipose tissue, are not good subjects for this or any other operation. In stout patients, with much subcutaneous fat on the abdomen, but otherwise in fair condition, it is well to leave the deep, oily wound quite open, and to pack it with gauze, so as to prevent any septic infection arising or spreading in the loose fatty tissue. By means of this precaution, I have been able to operate safely in cases otherwise risky, and whose condition was very miserable without operation.

7th, Where there is a weakened perinæum, a tendency to cystocele and rectocele, or distinctly relaxed retrosacral ligaments, the perinæum must be fortified at the same time that the round ligaments are shortened, or a Hodge's or other pessary, as an inferior support, will require to be permanently worn.

8th, Child-bearing women may have their round ligament shortened if necessary for backward displacement, as conception,

pregnancy, and parturition proceed normally afterwards ; indeed, more so than in a patient with a prolapsed and retroverted uterus. The question of also operating on the perinæum in cases of prolapse in child-bearing women requires consideration. In some cases I have used a Hodge till after the child-bearing period had passed, and then have operated on the perinæum. In others I have operated on the perinæum at the same time as the round ligaments, and afterwards performed, or recommended the performance, of primary suture of the perinæum after the rupture produced by parturition.

9th, A patent canal of Nuck has, in my experience, rendered the 'drawing out' of the round ligament on that side impossible, and the same remark applies to patients with an inguinal hernia. In two or three cases that I have operated on, the ligament on the opposite side was strong and available, and the cases did well, a Hodge pessary being retained until the patients passed from under my observation. Neither of these conditions contra-indicate the operation. The patent canal is not detected till the operation is in progress, and the hernia should be cured by operation. I only mention them as conditions that will probably prevent the complete performance of the operation.

10th, The operation should not be done, of course, till natural involution of the uterus has occurred after confinement or miscarriage, as a pessary, with other appropriate treatment, may cure such cases ; but chronic sub-involution, with retroflexion, are just the cases where the operation is most useful.

11th, In cases of complete prolapse, the shortening of the round ligaments, in addition to the perineal operations, renders the procedure a permanent success, where, with either operation singly, the success would be merely temporary. These operations are generally performed simultaneously, and the perineal operation is by far the most serious.

12th, In young single women, with troublesome displacements, the operation seems to me to be a necessity, to save them from the baneful effects of constant handling at the

hands of gynaecologists. It will be seen that most of my cases have been those treated by gynaecologists for years, often with a history of repeated attacks of inflammation, congestion, and disablement, even sometimes bedfast for months together; and some of these men could not understand why their patients became discontented, and asked for more permanent relief.

Practical Hints to Operators as to After-Treatment.

1. The Hodge, or the Hodge and stem, according to the nature of the case, are always introduced just before the operation is commenced, the patient being under the anæsthetic. The Hodge should be fairly large, so as to push the cervix well back, and relax the posterior uterine ligaments. When the hands of the operator are washed after replacement of the uterus in this manner, it is not necessary to soil his hands or the hands of his assistants till the operation is complete; then by a final digital examination he can assure himself that all is right.

2. When the external abdominal ring is exposed, it should not be interfered with until the ligament is seen and caught. Any dissecting or teasing out of the tissues tends to destroy the radiating fibres of the end of the ligament, and no doubt accounts for the failures to find it, and why it is so often declared 'absent.' Cutting through the intercolumnar fascia spread across the opening of the external ring allows the ligament to spring forth into prominence. When picked up with forceps and pulled upon gently, the ligament takes a shape and colour easily distinguishable from other structures. The nerve should now be cut with the point of a scalpel, and the ligament freed from bands of fascia until it stands out naked and clear as the undoubted round ligament, and nothing else. By gentle traction it gradually yields, and soon runs freely.

3. *How far should the round ligament be pulled out?—Always as far as it will come.* I never strip off the peritoneum, and risk opening the abdomen; but when the liga-

ment is quite taut, I allow it to slip back a little to give it play, and then pass the silkworm gut sutures, as directed in the previous chapter. It may be said that opening the abdomen is not a serious matter. It is a less serious matter when the abdominal cavity is not opened; and the least serious method of shortening the round ligament is the method to be employed. It may be said that if we pull each ligament as far as we can, we may pull the uterus too much to one side or the other, or we may lift it up too high. As a general rule, the position is satisfactory, but sometimes it is a little to one side or other, or too high up. Nature, however, corrects our rough work here in the same way that she has to do it after all operations. We have only to pull the fundus well forward, and nature will regulate the balance accurately in a little time herself. If we do not pull the fundus sufficiently well forward, then nature will destroy our imperfect attempt at cure. Within a certain radius the check action of the round ligament is all-powerful, because this action is then assisted by all the other and frequently opposing intra-abdominal forces that affect the uterus. Beyond their legitimate limits the round ligaments are useless, as they have no allies. I generally leave the inner end of the small wound unsutured, so that serum may drain away more readily. The end of the ligament left in the wound, and beyond the silkworm gut suture, sometimes, but rarely, sloughs; and an open wound prevents any retention of sloughing products. Generally, the wounds now heal by first intention, but safety and certainty are preferred to brilliancy.

During the first few days the wounds smart, and tension on the ligament in some cases seems to be productive of pain. In such cases one-eighth of a grain of morphia, repeated occasionally, gives sufficient relief to make the patient comfortable. The diet should consist of slops for a day or two, and then be simple and sufficient for a patient in bed.

The decubitus should be dorsal, with the knees flexed over a pillow. Catheterism should be practised most carefully, and

only when necessary, with the utmost gentleness and aseptic precautions, as the abuse of the catheter has sometimes given more trouble than the operation, and prolonged convalescence considerably in a few cases.

The bowels are not moved till near the end of the first week, and then I generally give small doses of calomel (gr. $\frac{1}{6}$), repeated every hour till one grain is administered. A soap-and-water enema is then given, and the result is generally satisfactory. The chief object is to avoid straining, and of course the patient must not sit up or get out of bed during the act. Should the enema fail, then the powders and enema are repeated, or liquorice, cascara, or other aperient prescribed.

The removal of the stem at the end of the third week is a matter of very little difficulty. It is encrusted with salts, and requires a little force to remove it. I generally dislodge it gently with the tip of my forefinger hooked behind the large oval knob at the end, and so pull it out. The Hodge is not disturbed, nor need the position of the patient be changed, although there is now no objection to turning her over on the left side during the removal of the stem.

An artificial 'period' generally comes on a few days after the operation, and remains a short time, terminating occasionally in a disagreeable vaginal discharge. In such cases a perchloride of mercury douche, 1.5000, or other antiseptic douche, is both useful and comfortable to the patient. After the stem is removed, it may be also used with advantage for some time.

For a few months after operation the patient must be watched, especially after the Hodge has been removed, until all congestion, periodical or otherwise, has disappeared, and the uterus has settled into the normal position. In several of my cases the uteri have shown a tendency to retrovert again, owing to the fundus being still heavy, from the long-standing congestion. Such cases, if left to nature, would soon relapse into the original condition, and be recorded as failures. Indeed, at first I reinserted a pessary, and looked upon them as failures, until

time showed me that they were not. Sometimes I place a simple ring instead of a Hodge, and find it keeps up the necessary support until the pelvic organs have become natural, without in any way distressing the patient. Patients often complain of various discomforts after operation, and both patients and medical men are inclined to think the operation a failure, owing to these troubles. I always see if the uterus is in position first, and if so, tell the women to wait patiently; that most patients have the same discomforts; that the womb is now in a different position to what it has been in for so many years, and that it has to become accustomed to its new position, and that when it does so, they will be the same as other people,—not exempt from all the ailments liable to affect humanity, but free from those produced by the displacement. The condition of the patient uniformly and gradually improves, and my older cases are the most satisfactory.

Frequent examinations or local treatment after operation are bad. Except to ascertain that everything is right, the parts should be left alone; and this advice is especially necessary in neurotic cases.

The occurrence of hernia is a rare event, and has not been noted in any of the reported sixty-nine cases. My method of performing the operation has been practically the same as my cure for hernia. Besides, the patient does not move from the dorsal decubitus for three weeks, and is advised to rest as long after as possible, so that every precaution is taken against its occurrence. Two cases of cysts growing on the end of the round ligament are reported. Both were at one time mistaken for hernia, and both were opened. One is quite well, the other has a painful knob on the end of the right ligament. I think one or two, or at most three of my cases required trusses for a tendency to hernia.

Neuralgic pain at the scar has been troublesome in three or four cases. In most it disappears in time; but in one case that I performed in London, Dr Heywood Smith had to remove the appendages for that and other uncured discomforts. He

found the uterus in good position in that case. Incision of the small nerve prevents this painful complication.

The ligament has broken off internally with me six times, but in none did any trouble result. The other ligament was generally strong, and the result good. In no case has the ligament taken an abnormal course, and except in hernia or patent canal of Nuck it has never failed to run, so that peritoneal inflammation affecting its currency is a rare complication.

The Ultimate Results of the Operation of Shortening the Round Ligaments for Retroflexion and Prolapse.

Sufficient time has now elapsed in my practice to enable me to speak with some decision as to the ultimate results of the operation of shortening the round ligaments. The other results need not detain us. Any mortality that has resulted in my practice ($\frac{1}{2}$ p.c.) has never been the direct result of the operation, but has been due to erysipelas. The operation is probably not more fatal than vaccination, removal of haemorrhoids, amputation of fingers, and similar operations.

It has been extremely difficult to ascertain the ultimate results in many of my cases, from the time of operation up to the present. The hospital cases cannot generally be traced after a few months; and even when found, it is a difficult and delicate business to procure an examination, to ascertain the actual condition.

Whenever accident has favoured me, I have obtained a record of the condition of my old hospital cases, but the best records can, I find, be obtained from private practice. As the medical attendant can usually give some information, or even procure the opportunity of a digital examination, the patients being so intelligent and sufficiently obliging as to submit to it, I have followed up the subsequent history of sixty-nine patients, and will now give a short summary of each, giving the condition and age of patient, the lesion, the symptoms, the kind of operation, and the duration of the mechanical effect of shortening the

round ligaments, as ascertained by examination, and the amelioration or otherwise of symptoms during the same period. The total number of cases where the round ligaments were shortened by me now amount to nearly four hundred.

1. Mrs C., æt. 30, multipara; neurotic; complete retroflexion. Round ligament shortened. Stem and Hodge used. Ten years after, uterus in good position, neurotic symptoms still present, but occipital, not pelvic as they were before.

2. Mrs L., æt. 25; sterility and pelvic pains; dysmenorrhœa; retroversion. Round ligaments shortened. Hodge; no stem. In good position fifteen years after. No children.

3. Miss C., æt. 24; retroflexion; dysmenorrhœa; dragging of left leg from pain; tender ovaries. Stem and Hodge. In 1898, fifteen years after, in good health; enjoys riding on horseback. Had ovarian troubles for many years after operation, which gradually disappeared.

4. Mrs S., widow, 26; primipara; retroflexion; dragging pain in back; hysterical and useless. Stem and Hodge. Fourteen years after, uterus in good position; patient attending to home duties; has not required attention for last ten years.

5. Mrs Y., æt. 30; acute retroflexion; dysmenorrhœa; pain in pelvis, dragging; could not wear a pessary. Stem and Hodge. Fourteen years after, uterus in good position; some cystocele and rectocele, for which she wears a pessary; no symptoms.

6. Mrs R., æt. 30; multipara; retroversion, and some prolapse, pain, weight, and discomfort. Hodge; no stem used. Quite well for thirteen years, when cystocele became troublesome, and required perinæorraphy; uterus well forward.

7. Mrs B., 34; multipara; retroflexion, with pain, dysmenorrhœa, dragging; unable to wear pessaries. Stem and Hodge. Uterus in good position four years after. Heard she was well twelve years after.

8. Miss H., æt. 23; retroflexion; constant pain and dragging; unable to wear pessary. Stem and Hodge. Twelve years after, uterus in good position; cyst on outer end of right round ligament requiring operation in 1897.

9. Mrs W., æt. 24; retroflexion; great pelvic pains, menorrhagia, and mental symptoms, threatening insanity. Hodge used without stem; fundus recoiled, and success only partial, the retroflexed uterus being drawn forwards. Symptoms relieved for about two years, when mental symptoms became worse, and she was removed from the neighbourhood. Has not been heard of since, now twelve years ago.

10. Mrs M., æt. 24; retroflexion; sterility; much pelvic pain and discomfort. Stem and Hodge. Twelve years after, complete relief. No children.

11. Mrs W., æt. 35; multipara; retroflexion, and tendency to prolapse. Very neurotic, bilious, with pelvic pains. Stem and Hodge. Two children since. Twelve years after, uterus in position; still bilious and nervous, with a troublesome right ovary.

12. Miss O., æt. 24; retroflexion; large, rigid ovary, pelvic pain; bedridden for several (8?) years. Stem and Hodge. Twelve years after, married; three children; uterus in position; ovary occasionally troublesome.

13. Miss B., æt. 22; retroflexion; cannot bear pessaries; pelvic pains, and much dysmenorrhœa. Stem and Hodge. Married since; several children; quite well, but actual state of uterus unknown.

14. Mrs P., æt. 32; retroflexion; pains in pelvis, sickness, and distress from pessaries. Stem and Hodge. One child. Uterus in good position, and patient quite well eight years after operation; not heard of for four years.

15. Miss R., æt. 22; retroflexion; dysmenorrhœa, and pelvic discomfort. Stem and Hodge. Two years after, uterus in good position. Married, and had one child. Not heard of for ten years; address unknown.

16. Miss D., æt. 22; retroflexion; hysteria, sickness, and prostration. Stem and Hodge. Ten years after, uterus in good position; sickness and hysteria unchanged. Married and went abroad; not heard of since.

17. Mrs O., æt. 35; retroflexion, with large tender ovaries.

Some adhesions, pelvic pains, sickness, and invalidism. Stem and Hodge. Much improved for five years, then right ovary became enlarged and very tender, and was removed. Uterus was then found in good position, in spite of adhesion of fundus to rectum. She died suddenly of pelvic hæmatocoele three months after abdominal section.

18. Miss Ca., æt. 26; retroflexion, and acute pain in sacrum, of a spasmoidic character, and very severe. Stem and Hodge. Twelve years after, uterus in position, but pain continues; appendages removed for pain without success.

19. Mrs S., æt. 28; primipara; retroflexion; pelvic pains and much distress. Stem and Hodge. Pregnancy, parturition. Examined two years after, uterus in good position; not heard of since.

20. Mrs G., æt. 43; married seventeen years; sterile; retroflexion and pelvic discomfort, with menorrhagia. Stem and Hodge. Girl born two years after operation. Uterus still in good position ten years after operation.

21. Mrs C., æt. 36; multipara; prolapsus uteri, dragging, etc. Could not wear pessaries. Round ligament and perinæum. Well six years after, when she went abroad on account of chest disease.

22. Mrs M., æt. 30; primipara; retroflexion and prolapse, pains in back, dragging. Stem and Hodge. Pregnancy twelve months after; miscarriage at fifth month, through strain and want of care. Chronic subinvolution; retroflexion partially recurred, and pessary required to be worn for a long time. Now, eleven years after, rides a bicycle, and seems quite well. Position of uterus not known.

23. Mrs S., æt. 35; prolapse and retroflexion; dragging, leucorrhœa, and pelvic discomfort. Round ligament and perinæum. Well two years after; not heard of since, as she has left the locality.

24. Mrs H., æt. 28; primipara; deformed pelvis, retroflexion; local discomfort and hysteria. Stem and Hodge. Uterus in good position five years after, and local symptoms

better ; hysteria much improved, with the exception of one prolonged attack in fourth year ; not heard of her for five years.

25. Miss Lo., æt. 25 ; retroflexion, and enlarged prolapsed left ovary ; local and general neurotic symptoms ; patient bed-ridden. Stem and Hodge. Ten years after, patient going about well, without local or general symptoms, and uterus in good position. Ovary small, and quiescent. This patient was advised to have her appendages removed, and it was only after some consideration that the minor operation was accepted instead, with most happy results to patient.

26. Mrs Co., æt. 28 ; multipara ; retroflexion ; great pelvic distress, with collapse, anorexia, etc., of a spasmodic nature. Pessaries failed to relieve. Stem and Hodge. Two children since, and uterus in position ten years after. No children for six years before operation.

27. Miss Ca., æt. 24 ; sister of No. 18 ; retroflexion menorrhagia, great pelvic discomfort. Stem and Hodge. Uterus in good position three years after. Seen at the time of writing ten years after, looking well, and without any symptoms. Local examination not possible.

28. Miss Di., æt. 28 ; retroflexion ; sickness, pelvic pain, and discomfort ; repeated attacks of ovaritis. Stem and Hodge. Relieved for a year, and then all symptoms returned ; four years after, appendages and three small pedunculated fibroids removed from fundus. Uterus in good position, and round ligaments seen to be efficient at time of operation. At present nine years after first operation, she is free from pelvic pain, and sickness, but not robust.

29. Mrs Ha., æt. 35 ; retroflexion ; sterile ; pelvic discomfort, unrelieved by pessaries. Stem and Hodge. Well three years after.

30. Mrs Re., æt. 28 ; primipara ; acute retroflexion, dragging pains, and pelvic distress ; anorexia, dyspepsia, and sub-involution. Stem and Hodge. Tendency for fundus to fall back, and Hodge worn comfortably for four years. Five years after operation, uterus in good position. Patient well at present, nine years after operation, and uterus normal.

31. Mrs Me., æt. 42; retroflexion and slight prolapse; very nervous and hysterical, with alleged great pelvic troubles; pessaries made her worse. Uterus in good position nine years after, and symptoms much improved; no local troubles.

32. Mrs Ma., æt. 28; sterile, neurotic; retroflexion, with sacral pain. Stem and Hodge. Uterus in position three years after, but unhappy family life; neurotic symptoms unchanged. Not heard of for four years.

33. Mrs H., æt. 30; multipara; retroflexion and prolapse; pelvic discomfort, dragging. Stem and Hodge, and afterwards perinæum. Two children since; perinæum stitched after each parturition. Six years after, uterus in good position, but patient insists on wearing a small ring to *relieve cardiac symptoms*.

34. Mrs Le., æt. 31; retroflexion; very nervous, sterile, pelvic pain, anorexia, vaginismus. Stem and Hodge. Seven years after, no pelvic symptoms; uterus in good position. Dyspeptic, with bad teeth, which she is to have attended to.

35. Mrs M'Cu., æt. 29; sterile; pelvic pains. Lived in the country, beyond the reach of skilled gynæcological attention. Stem and Hodge. Three years after, uterus in good position; some pelvic discomfort. Not heard of since.

36. Mrs Mi., æt. 38; sterile; retroflexion and slight prolapse; pelvic pains and discomfort. Stem and Hodge. Three years after, quite well; no discomfort, and uterus in position.

37. Mrs Au., æt. 34; very stout woman; retroversion and complete prolapse; great distress, mental and physical. Perinæum alone operated on, and yielded completely in less than a year. Round ligament and perinæum. Four years after, she was quite well physically, but her mental state was still unsettled, through the loss of her husband and financial worries. A good example of the advantage of shortening of the round ligament and advancement of the perinæum over advancement of the perinæum alone, in a case where pessaries were entirely inefficient. She had previously been under the care of two well-known gynæcologists consecutively, and came to Liverpool as a hopeless case.

38. Miss By., æt. 35; retroversion and slight prolapse, drag-

ging pains, and general pelvic discomfort. Stem and Hodge. Watched the case for five years after operation; uterus in good position, and pelvic symptoms disappeared. At time of writing, she consulted me for discharge and erosion of cervix.

39. Mrs Ho., æt. 35; retroflexion; discomfort; dislike of pessaries. Stem and Hodge. Quite well of all symptoms three years after. No report of condition of uterus.

40. Mrs K., æt. 34; sterile; large, heavy uterus; dragging pain, and great distress. Stem and Hodge. Improved for a time, then fundus fell back, and pessary necessary. Heard three years after that a fibroid is developing in fundus.

41. Mrs M., æt. 40; multipara; retroflexion and prolapse; painful discharge, attack of eczema of vulva. Round ligament shortened, and perineum advanced. Four years after, well, and in a responsible situation. Condition of uterus not ascertained for two years.

42. Mrs R., æt. 26; sterile; retroflexion; enlarged and prolapsed left ovary, anorexia, anaemia, and great pelvic discomfort. Question of removal of ovary, but shortening of round ligaments preferred as a preliminary. Five years after, uterus in good position; ovary smaller, patient much better, and able to get about.

43. Mrs As., æt. 37; sterile; retroflexion; pelvic troubles and dysmenorrhœa. Stem and Hodge. Three years after, in good position; pelvic symptoms lessened, but not quite disappeared.

44. Miss T., æt. 39; retroflexion; pelvic pain, dragging, etc. Stem and Hodge. Three years after, pelvic symptoms quite disappeared; uterus not examined lately, for obvious reasons, but was in good position about six months after operation.

45. Mrs C., æt. 24; multipara; retroflexion and prolapse. Stem and Hodge, and afterwards the perineum advanced. In good position two years after.

46. Mrs Ru., æt. 26; primipara; retroflexion. Came to have ovaries removed for pain, discomfort, and supposed great danger at confinement. Stem and Hodge. Has had a baby since, and is practically quite well three years after; uterus in good position four weeks after confinement; not heard of since.

47. Mrs At., æt. 36; multipara; retroflexion and prolapse; pelvic pains and backache; metrorrhagia. Stem and Hodge. Uterus in good position. Eleven years after, some cystocele and rectocele, but not requiring any treatment. Patient vigorous and well.

48. Miss R. H., æt. 26; retroflexion and prolapsed movable kidney, caused by a strain in lifting furniture; dragging pains in pelvis, and unable to work. Stem and Hodge. Fundus recoiled and uterus relapsed. She obtained a kidney-belt; and last time seen, about two years after, she looked well. Position of uterus unaffected by operation.

49. Mrs S., æt. 45; complete prolapse. Round ligament shortened, stem and Hodge being used, and afterwards perineum advanced. Patient very troublesome; wounds supplicated, through interference on her part with dressings, and it was doubtful if round ligaments held. Died four to five years after of apoplexy, and her doctor said that her condition was, he thought, more tolerable after operation.

50. Mrs R., æt. 54; multipara; complete prolapse, with excoriation of uterus and vaginal wall; very stout old lady; round ligament shortened and perineum advanced. Two years after, only partial success, as all the tissues of the perineum very relaxed and bulging outwards. An external pad slung from her shoulders kept her fairly comfortable.

51. Mrs St., æt. 50; multipara; prolapse. Round ligament and perinæum. Good result, as seen two years after; not seen for ten years.

52. Mrs O., æt. 27; multipara; pain in pelvis; several miscarriages; retroflexion and prolapse. Round ligament shortened and perineum repaired. Two years after, quite well in every way, and in three years a baby; confinement natural; not heard of since.

53. Mrs D., æt. 38; multipara; retroflexion; pains in back, dragging and discomfort. Stem and Hodge. Has had two babies since; uterus in position seven years after. Lately some cystocele and rectocele, and the question of operating on the perineum has been considered, but not acted upon.

54. Miss L., æt. 23; acute retroflexion; right ovary prolapsed; pains, dragging; very well a year after. Heard that she was married and had a family, but no report of state of uterus since a year after operation.

55. Mrs J., æt. 26; sterile; retroflexion; dragging pains, menorrhagia. Stem and Hodge. Well nine years after; no children, but one miscarriage at fifth month, eight years after. Three years after operation, small cyst removed from end of right stump of round ligament.

56. Miss C., æt. 36; retroversion; dragging pains and pelvic distress, so that she was unable for her work as district visitor. Hodge only. Uterus in good position six years after. Went abroad as a missionary.

57. Miss B., æt. 32; retroflexion; dragging pain. Stem and Hodge. Six months after, all symptoms relieved and womb in good position. Heard four years after that she was married and had children, but no report of exact condition of pelvis.

58. Mrs T., æt. 32; retroflexion; dragging pains and epileptic fits. Stem and Hodge. Five years after, uterus in good position. Epilepsy much better, fits now very occasional.

59. Mrs Br., æt. 34; multipara; retroflexion and prolapse; pelvic pains passing down back and thigh; much congestion and great distress; dysuria. Stem and Hodge. Eight years after, uterus in good position, and patient comfortable.

60. Miss R., æt. 19; complete retroflexion; bearing down pain in left side; dysmenorrhœa, leucorrhœa. Stem and Hodge. Three years after, in good position, and no distress.

61. Mrs Du., æt. 23; sterile; complete retroflexion; bearing-down pain, anorexia, dysmenorrhœa. Stem and Hodge. Two years after, in good position and complete relief.

62. Mrs M. J. N., æt. 25; sterile; retroversion; backache and menorrhagia. Hodge alone. Eighteen months after, quite well, and uterus in good position; still sterile.

63. Mrs Er., æt. 26; retroflexion; sterile; pelvic discomforts.

Stem and Hodge. In eighteen months uterus in good position; still sterile; a slight tendency to hernia; truss.

64. Mrs E. C., æt. 21; primipara three years ago; retroflexion and some prolapse; menorrhagia, dysuria, and leucorrhœa. Stem and Hodge. Pregnant eleven months after when seen; heard that labour satisfactory; not seen or heard of since.

65. Mrs D., 25; multipara (3), last two years ago; retroflexion and split cervix, and prolapse, dysuria, menorrhagia. Round ligament and Emmet. Hodge. Two years after, uterus in good position, and patient has had her fourth child.

66. Mrs S. H., æt. 29; multipara (3); prolapsus uteri, ruptured. Round ligament and perinæum. No stem or Hodge used. Left ligament snapped off short when pulled out; right ligament good. Showed herself six years after; uterus in good position, pregnant. Not heard of since.

67. Mrs C., æt. 33; multipara (8); retroflexion and prolapse; dragging pains across the lumbar region and lower part of the abdomen. Emmet's operation and round ligaments shortened simultaneously. Has had one child since operation; and six years after was well, and uterus in good position.

68. Mrs V., 25; married two years, no family; bearing-down pains, metrorrhagia, and pessaries failed. Operation, Nov. 30, 1893. Stem and Hodge. Left for home, Dec. 27, 1893. On May 31, 1897, in response to an inquiry about her condition, her husband writes:—"Dear Sir,—I am glad to tell you that my wife is in good health, and has been ever since she came from the hospital. She has had two children. I thank you very much for the cure you have made of her."

69. Miss Janet B., æt. 38; retroflexion; bearing-down pains, sometimes very acute, violent headaches, great excitement. Something slipped six years ago, and above symptoms continued since. Menorrhagia at times, and frequent micturition. June 1, 1893, operation; stem and Hodge. Was kept in hospital afterwards as an officer, and is now a matron of a hospital, and reported to me as quite well, June 1898. Uterus was in good position two years after operation.

Medical Opinions of the Value of the Operation at the Present Time.

The opinions of an originator of an operation in regard to the *value of the operation* are liable to a liberal discount, and no doubt the readers of this work would like to know what other people say about the shortening of the round ligaments. In preparing to supply this information, I have been surprised at the mass of literature that has already accumulated on the subject in all civilised countries, and written in all modern languages. I possess monographs on the subject by Drs Manrique, J. Barrett et Nazaris, Camille Moreau (French), Rasenzeff (Russian), Varnaly (Bucharest), and numerous reprints by American, Australian, as well as English writers. The medical journals of all countries abound with cases and comments. The intention I had formed of condensing this scattered mass of literature into a coherent compendium of opinions and results, to be inserted here, had to be abandoned on account of considerations of time and space. Perhaps I may yet accomplish this task, which will be to me a labour of love. At present I must confine myself to as true a representation as possible of the present attitude of the profession towards the operation, as illustrated by recent reports and discussions.

It is difficult to do this fully, as strong interest in the operation has subsided and the operation has fallen into line, being performed in suitable cases without remark. Many of my medical acquaintances and friends operate in this way, and I thought of writing for their opinions. But this would be to ask for a testimonial, and hence I decided to depend on published statements.

At the discussion at the British Gynaecological Society, 12th March 1896, Prof. Mayo Robson has only operated six times. In one the uterus was in good position six months later, and patient well two years after. Another case of extreme pro-cidentia, in which the round ligaments, the vagina, and perineum were operated on, was well three months after.

Another patient was well three months after, but the subsequent history was unknown. A case of procidentia was a complete failure; and in the sixth case the operation failed after a time, probably owing to adhesions.

Mr J. W. Taylor, Birmingham, has operated on about a dozen cases. In uncomplicated cases the results were fairly good, and two patients afterwards became pregnant, and went on to full term. But the operation had two drawbacks: firstly, the abdominal wall had to be incised on each side at its weakest part; and secondly, when there were adhesions, it was not possible to draw out the round ligaments. Dr Edge had performed Kocher's modification of Alexander's operation, and he gave it up for ventrofixation.

Dr Bantock never performed the operation, as he conceived the principle to be wrong.

Dr Elder (Nottingham) performed several operations for uncomplicated displacements, but he gave it up for three reasons: 1st, on account of the uncertainty of always finding the round ligament; 2nd, because the results did not seem to him quite satisfactory; and 3rd, because it was not devoid of risk.

Dr Wm. Duncan performed the operation seven or eight years ago for prolapse or retroversion. He found the operation quite simple, and did not agree with Dr Elder as to the uncertainty of finding the round ligament; but he failed to see how a ligament containing so little muscular tissue could keep up a uterus which was hypertrophied and prolapsed, and all the eleven cases reverted within four months to their original condition. He did not use a stem pessary, because he regarded this instrument as dangerous.

Lewers (*Diseases of Women*, p. 140—a text-book for students) says the operation has been recommended (1) for prolapse, and (2) for retroversion. (Just the reverse of my recommendations; the operation of shortening the round ligaments only acting directly on backward displacements, and indirectly on prolapses.) All versions and flexions, he says, can be cured

by the watch-spring pessary, and then only prolapse is left for operation by shortening the round ligaments. But he then shows that in prolapse the uterus is too long to be tucked up in the pelvis. He says he has never performed the operation. I would say he has never *read* about it, or he would not have made such misleading statements. One of my students, who had watched many round ligament operations, pointed out to me this caricature of a description of the principle and practice of the operation.

Dr Galabin, in his text-book, describes the objects and method of operation correctly, and says that it has not met with general acceptance. It may be presumed that the round ligaments are liable to stretch again, as other ligaments stretch which have much more power than the round ligaments to hold the uterus in position.

Dr Adams (*Glasgow Medical Journal*, 1896, p. 437) writes:—“I have of late years tested the operation thoroughly, and the confidence I feel in its success compels me to ask my obstetric and surgical colleagues to give it a fair trial.”

If we now turn to American literature, we find a marked contrast to the attitude of the profession here to the operation.

Clinical Gynaecology, by American Authors (Keating & Coe), p. 505.—“I have thus far, during the past ten years, performed it (the round ligament operation) sixty-five times with such success, both as to the immediate and permanent results, as to render me more and more enthusiastic in its favour. I have not only succeeded in lifting up and keeping the uterus in its normal position for years after the operation, but I have seen probably as many as a dozen of the cases conceive, go to term, be normally delivered, and the uterus retain the position in which I placed it.”

Dr Balfour Marshall (*ibid.*):—“I had thought the utero-sacral folds the most important ligaments in prolapse, and recommend rather a colpoperineorraphy, but think operation more justifiable for replacing movable retroflexions.”

Dr W. L. Reid :—Three out of eight cases, the operation is successful as regards restoring of the uterus. One case left the hospital with a double hernia, and a cellulitic deposit, bronchitis, etc. In patients not able to rest and wear a pessary, the operation may fail, as the scar tissue is not firm (*ibid.*).

Dr Robt. Abbe (*Annals of Surgery*, 1896, p. 69) uses the ligament itself to stitch up the canal. “The wide and growing interest displayed in all countries in the Alexander operation attest its value. Many scores of patients have borne children to full time without the slightest mishap. Experience also shows that, after pregnancy, the ligaments are found to be as they were after operation, and no retroversion occurs. Every surgeon finds a sense of satisfaction in doing well an operation of such merit, yet of so little risk.”

Dr Paul F. Mundé (*Boston Med. and Surg. Jour.*, 1888, p. 56) :—“In 19 to 23 cases presented, the operation was successful. Where the perinæum is destroyed or greatly relaxed and where the uterus is more or less completely prolapsed, it is wise to supplement the Alexander operation by narrowing the vagina and restoring the perinæum. Indications for combined operations exist in many instances, but six of the twenty-one cases reported were those in which only Alexander’s operation was performed.”

In concluding, Dr Mundé said that in properly selected cases, Alexander’s operation usually does what is expected of it; and that if proper antiseptics is employed, the danger of the operation is practically *nil*. He believes that Alexander’s operation will not be supplanted by the at-present-fashionable, but much more dangerous laparotomy.

M’Gannon (*Amer. Gyn. and Obstet. Jour.*, 1896, p. 202) reports 91 cases of shortening the round ligaments, with 4 pregnancies and 3 normal deliveries.

Dr G. M. Edebohls (*Annals of Gynaecology and Paediatrics*, Oct. 1896, p. 926) reports 116 cases, with 4 failures, 12 pregnancies, 2 abortions, 6 normal labour, and 4 not yet delivered.

Dr A. Lapthorn Smith reports 53 Alexander operations, and almost exactly describes the operation as I perform it. Four of his cases had children, with no return of retroversion; three were failures; all the others remained in good position. A few were no better for operation, because the ovaries remain, which would have been removed if ventrofixation had been done (*Trans. Gyn. Soc. New York*, p. 215).

Dr Mundé afterwards reports 120 cases. Twenty pregnancies, and one woman had five children after operation. All his cases that he had seen were successful. Performs the operation with closure of vagina, etc., in cases of prolapse.

Dr Beverly M'Monagel of San Francisco, p. 242, says, "for simple uncomplicated retroversion, Alexander's operation will pull the uterus forward, but it is a bygone in my hands. I utilise the round ligaments, after having opened the abdomen, by denuding and stitching them together."

Mathew D. Maine, M.D. Buffalo (*Am. Gyn. Trans.*, 1897, p. 217).—For cases with adhesions he opens the abdomen, clears and loops the round ligament. This operation does not compete with Alexander's operation, which he has adopted, and now thoroughly approves, and which fulfils the indications in most uncomplicated cases.

Dr Newman of Chicago operates by cutting over the internal abdominal ring, or by opening the canal. Satisfactory results first performed by him in 1889. Says that Dr Franks of Chicago first discovered this method; that he has yet to know of a single physician who has operated any number of times, using the improved method, who has not met with good results, and with whom the operation has not grown in favour (*Amer. Jour. Obstet.*, 1891, p. 257).

Dr A. H. Abbot, Minneapolis, reports 19 cases: 13 remained well anatomically, 10 clear of symptoms, 4 improved, 5 no change, 6 failed anatomically, and in 3 of these symptoms relieved (*ibid.*, p. 363). Would not operate if patients ever had peritonitis.

Dr F. H. Morton reports 7 perfectly successful, 3 not (*ibid.*, p. 363).

C. J. Bond, F.R.C.S., Leicester (*Lancet*, Feb. 12, 1898).—Opens the abdomen and takes the round ligament out of its bed in the broad ligament, and pulls it through the abdominal walls at the laparotomy incision where it is stitched.

Dr J. Riddle Goffe, New York (*Trans. Am. Gyn. Soc.*, vol. 22, p. 235).—Shortens the round ligaments through the anterior vaginal fornix for backward displacements, and gives the following references.

Wertheim (*Centralblatt f. Gyn.*, Mar. 7, 1896).—Opensthe abdomen in the anterior fornix, and attaches the ligaments at a point one or two centimetres from the horns of the uterus to the vaginal wall, or he sometimes simply doubles the round ligaments on themselves.

Guenther, after setting the organs free from their adhesions, working through the anterior vaginal incision, suspended the uterus by its round ligaments, by passing a silk suture through the abdominal wall from within out, and tying it to the skin (*ibid.*, Mar. 28, 1896).

Kiefer, of Marton's clinic, doubles the round ligaments on themselves, working through the anterior vaginal incision (*ibid.*, Apl. 11, 1896).

Dr Byford, Chicago, not only shortens the round ligaments through the vaginal incision, but attaches the fundus uteri to the bladder peritoneum as high up as possible (*Med. News*, Oct. 31, 1896).

At the Swiss International Congress of Gynæcology and Obstetrics, it was generally agreed that Alexander's operation was needed in a few cases of mobile displacement, and that after breaking down adhesions, the operation may still be performed (*Lancet*, Oct. 17, 1896).

Dr Cleveland, New York (*Am. Gyn. Soc.*, p. 20, 1895), considers shortening of the round ligament as one of the most beneficial operations ever devised. Gives report of 83 cases in the Women's Hospital.

Dr Frances H. Davenport, speaking at same society, referred to the want of relief of symptoms, the pains, etc., and would limit the operation. "I am free to say, however, that as yet I have had no experience with any other operation which has been more satisfactory."

Dr Hy. C. Coe of New York advocates the operation.

Dr Wm. H. Horner is in favour of the original operation.

Dr Van de Warker is against the operation.

Dr Emmett says, by the operation the uterus is depressed in the pelvis as the fundus is drawn forward; and thinks it is the degree of prolapse, not of version, that causes the trouble. Hence, the operation should aggravate the disease.

Dr J. M. Baldy, Philadelphia, is afraid of adhesions, even cobweb adhesions.

Dr F. N. Johnson, Boston.—Two cases of pregnancy and labour at term, following the Alexander-Adams operation. Labour natural, and uterus in good position afterwards.

In Germany, Werlt, Kocher, Kustner, Calman are reported to be warm advocates of the operation; and the many monographs written in French show the interest taken in the operation by that nation.

I have thus placed before my readers the method of operating that I approve of, the ultimate results of the operation in my hands in as many cases as I could find, more than two years after operation, and the recent opinions of my medical brethren for and against the operation. I do not summarise—I leave that to each student of the operation.

COLI-CYSTITIS AS A COMPLICATION OF ENTERIC
FEVER.¹ By CHARLES A. HILL, M.B., B.C., B.A. Cantab.,
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THE occurrence of cystitis in enteric fever is a complication so rarely met with that the brief history of the following case has been deemed worthy of record, more especially as the nature of the micro-organism present in the urine was determined by bacteriological examination.

Clinical history.—The patient, a man 55 years of age, was admitted into the Royal Infirmary on 25th Nov. 1897, under Dr Glynn's care, suffering from enteric fever. He was then in about the second week of the disease, and presented the usual symptoms met with at that period of the illness. The clinical diagnosis was confirmed two days later by Widal's test, his serum exhibiting a marked agglutinative action on typhoid bacilli within half an hour.

On 29th Nov., after being in hospital four days, his temperature had come down from 102° F. to normal, and he appeared to be on the road to recovery. On 30th Nov. he first began to experience trouble with his water, having frequent desire to pass it, though able to void but little at a time. On examination, the bladder was found to be distended to a level about two inches below the umbilicus. This condition was relieved by catheter, but recurred again and again, and gradually became worse, pus being mingled with the urine, till, by 4th Dec., he had developed an acute cystitis, with a temperature of 102° F. The bladder was washed out twice daily with boracic acid solution, whilst alkalies and hyoscyamus were administered

¹ Read at the Medical Institution, Feb. 3, 1898; but arrived too late to be put in proper place.

internally. Under this treatment he gradually improved, his temperature coming down to normal, and remaining so until he left the hospital, convalescent, on 5th Jan. 1898.

Bacteriological examination of the Urine.—On 9th Dec. a small quantity of urine was drawn off by catheter into a sterile test-tube and sent up to the Pathological Laboratory for bacteriological examination, with the view of determining the nature of the organism or organisms present. The cultivation media used were agar-agar, carbolic gelatine, and Elsner's medium. For the latter, which consists of potato juice, gelatine 10 per cent., iodide of potash 1 per cent., it is claimed that typhoid and colon bacilli develop readily upon it, to the exclusion of all common saprophytes.

Half a cubic centimetre of the urine was drawn up into a sterile pipette, and added respectively to a melted tube of each of the three media. The resulting mixture was then poured into sterile Petri dishes, with the usual precautions.

The agar Petri dish was incubated at 37° C., and the other two at 22° C.

After twenty-four hours' incubation a most profuse growth appeared on all the plates, numerous small round greyish dots thickly crowding all the three different media. On microscopical examination only one organism was found to be present throughout, a sluggishly motile bacillus, which on sub-culture was identified as the *bacillus coli communis*.

The points of identification by which this bacillus was recognised and differentiated from the *bacillus typhosus* are as follows:—

On the oblique surface of nutrient gelatine it grew rapidly without producing liquefaction, forming a flat, dry, limited expansion of a blue-white glistening pearl colour.

On the oblique surface of nutrient agar it grew rapidly, forming in twenty-four hours a dirty-white glistening expansion.

On potato its growth was rapid as a markedly yellow expansion.

On lactose-litmus-agar it appeared as a pink growth, whilst

the colour of the surrounding medium was changed from blue to red, owing to the formation of acid.

In peptone-salt solution it produced indol in three days.

Milk was coagulated in twenty-four hours, with a strongly acid reaction.

In glucose gelatine shake culture a copious development of gas bubbles occurred in twenty-four hours.

In beef bouillon it caused diffuse clouding, with sedimentation.

On the oblique surface of Elsner's medium it formed a well-marked growth in forty-eight hours, without producing liquefaction.

Finally, its virulence was tested on two guinea-pigs by intra-peritoneal injection of a twenty-four hours' bouillon culture. The first animal, weighing 640 grammes, received 6 c.c. The second, weighing 650 grammes, 10 c.c. In neither case did any ill effects follow the injection. Both the animals remained perfectly well. The absence of virulence may probably have been due to the fact either that the organism had been in sub-culture in the laboratory nearly five weeks before the injections were made, or that the bouillon culture had been prepared from a growth on carbolic gelatine. Certainly it was not due to an insufficient dose being given, as less than half that amount is ordinarily found to be lethal, when the colon organism is freshly isolated.

Remarks.—The points in connection with this case upon which I wish especially to lay stress are, firstly, the rare occurrence of cystitis as a complication of enteric fever; and secondly, the presence of the colon bacillus in the bladder, as the offending agent in the causation of cystitis.

On first seeing the urine and hearing the history of the case, I thought that possibly typhoid bacilli would be found present, since we know that they can often, though not always, be demonstrated in the urine about the third week of the disease. The result of the bacteriological examination, however, showed their entire absence, and the presence of a pure culture of *bacillus coli communis*.

Nor is this surprising when we bear in mind that in cystitis the latter is the organism most frequently found to be present.

Thus, in 49 cases of cystitis recorded in the *Centralblatt für Bakteriologie* from 1894 to 1897, colon bacilli were found in 45,—nearly 92 per cent. Melchior¹ examined 36 cases, and found the colon bacillus the organism most frequently present. Blumer² investigated 10 cases of pyuria in enteric fever, and found coli in 7, typhoid bacillus in 2, *Staphylococcus albus* in 1; whilst Bary³ was able to experimentally produce cystitis in a rabbit by intravenous injection of coli cultures.

The presence alone of a micro-organism in the bladder has no power of producing cystitis, notwithstanding the fact that urine is an ideal culture medium. Some predisposing cause, such as traumatism or retention of urine, must be present. The latter factor must be regarded as the determining cause in this case.

¹ *Cystite et Infection Urinaire*, édition Française, par le Dr N. Hallé.

² *John Hopkins Hosp. Reports*, vol. v.—Report on Typhoid Fever, II.

³ *Centralblatt für Bakteriologie*, Band 15, p. 568.

Reviews.

A TEXT-BOOK OF DISEASES OF THE KIDNEYS AND GENITO-URINARY ORGANS. By Prof. PAUL FÜRBRINGER, Director of the *Friedrichshain Hospital, Berlin, &c. &c.* Translated from the German, with Annotations by W. H. GILBERT, M.D. (*H. K. Lewis. Vol. 2. Pp. 309.*)

IN a notice of the first volume of the above work, published in our number for January 1896, we drew attention to one or two defects which, in our judgment, tended to mar its undoubted excellences. The first was a quiet but dogmatic assertion of many truths which at the best could only be considered probable, and were often very doubtful; the second, an alleged translation into English, the translation really consisting largely of German idiom clothed in English words. There is a great improvement in both respects in the volume before us.

We drew attention also to another fault, which has been partially, but only partially, remedied in this volume before us.

It was that of merely giving the names of authors to whom reference, and sometimes very important reference, was made, without indicating the volume or journal, much less the page of either, where the matter referred to could be found. With a view presumably of supplying this deficiency, twenty-three pages of bibliography are given at the end of the present volume, but there is scarcely a page in the book which does not contain the names of authors that are not to be found in it. Thus, on page 81, twenty-four names are given, of which twelve only appear in the bibliography. This is sufficiently irritating when the omitted names are those of men who are well known, and whose opinions are scarcely open to doubt,

as, for example, that of Thornton, which, from the relation in which it stands to the subject of the surgical treatment of primary renal sarcoma and carcinoma, can only be that of Knowsley Thornton. But when, as in some instances, no other name than that of Smith follows the statement in the body of the book, while the bibliography does not contain the name of a single member of that numerous and important family, it would be exceedingly difficult to bring the statement home to its author. An example may be given from p. 77: "The expulsion of elements partly discoloured, vermicular or tuft-like (fibrinous clot), a phenomenon observed by Smith, was evidently occasioned by previous haemorrhage." "Which Smith?" we may fairly ask. Will all the Smiths be fighting for the credit of the discovery?

As to dogmatism, this second volume is in marked and agreeable contrast with its fellow, for indeed there is a pervading air of modesty throughout it, which, coupled with the obviously very extensive and exact knowledge of the author, and his attitude of quiet independence, gives the work a great charm.

As to the literary form of the book: if, as we suppose from his name, Dr Gilbert is a native of Great Britain, he has much more successfully endeavoured in this than in the former volume to reproduce his author's German ideas into the idiom of his own mother-tongue. That he has not absolutely succeeded is not surprising, and here and there singular expressions occur, the meaning of which is by no means clear, owing to peculiarity of idiom.

All these, however, are minor defects, and the book, in spite of them, is one of very great merit. In nothing, perhaps, is it so remarkable as for the fulness of knowledge of the author, and his transparent honesty. There is scarcely a page that does not bear evidence to one or other of these facts. He is anxious to give every man credit for anything that he has done; and he is always ready to confess, quietly and without any appearance of boasting, when a more enlarged experience

or wider observation has led him to modify opinions formerly held and published; and the reader rises from the perusal of the book with the conviction that he has in Professor Fürbringer one of the very best guides to the comprehension of diseases of the kidneys and urinary organs that modern medical literature is likely to afford him.

We make this statement the more readily because of the strictures which we felt bound, in all honesty, to pass on some of the features of the first volume. This second volume is nearly double the size of the first, probably more than double its value to the practical physician, whose great object is not only to have a clear understanding of what ails his patient, but of the best way to cure him.

One clear and outspoken statement in that earlier volume was alone sufficient, however, in our judgment, to give it value, and would have required a grateful recognition on our part, even if the book had had no other merit. It was that concerning the employment of hypodermic injections of pilocarpine or its salts in uræmic convulsions. Professor Fürbringer boldly but quietly, on the strength of observation and experience, challenges the almost universal opinion of therapeutists on this matter. "When all the prescribed means have been tried," he writes, "a great number of authorities, amongst others Demme, Preetorius, Boegehold, Seemann, have recommended subcutaneous injections of pilocarpine as anti-uræmic. We cannot approve of them. Without considering the various derangements already mentioned, these injections can cause the reflux of saliva in coma. We, like Hensch, have never had occasion to regret having given up this remedy."

It is time that a serious protest should be raised against the loose general and unguarded way in which powerful remedies, such for example as the one in question, are recommended as applicable to the treatment of various diseases by those who are looked up to by the student and practitioner as authoritative guides. Without a single word of caution as to when it may be given, and when it certainly should be withheld, they are

informed that the hypodermic injection of pilocarpine is useful in uræmic convulsions, or Bright's disease; and not perhaps till serious or even fatal results have followed the practice, do they learn with what a dangerous weapon they have been endeavouring to combat disease.

That this is no unfounded statement will be evident from the following quotations from the five most recent and most widely read books on Pharmacology and Therapeutics published in Great Britain and America. One of the American authors, of whom two are here mentioned because they embody the most recent ideas, says, "In uræmic accidents and puerperal eclampsia, injection of pilocarpine is of marked benefit." The other confines himself to the brief remark that "the principal internal use of pilocarpine is as a diaphoretic in Bright's disease"; and then, in his clinical index, under the heading of 'uræmia,' simply mentions the two drugs 'opium, pilocarpine.' Of the three British writers, the first says, "Pilocarpine has been employed for many conditions, but its great use is as a diaphoretic in Bright's disease. For this purpose $\frac{1}{2}$ gr. or more of the nitrate is injected subcutaneously in the evening." The next remarks that "pilocarpine has been tried in many diseases . . . It is of most service in renal disease, especially with uræmia, eliminating both water and urea." The third says, "Its chief use, however, is in dropsy, and especially in uræmia, depending on disease of the kidneys. It may be given subcutaneously, as the nitrate, in $\frac{1}{2}$ gr. to $\frac{1}{3}$ gr. doses. In renal dropsy it not only removes water from the body, but it removes urea, and possibly other products of tissue waste. Some of the urea is excreted in the sweat, and a considerable amount appears in the saliva. Probably the removal of these products from the body is the reason why pilocarpine cuts short uræmic convulsions. In puerperal eclampsia it is not so successful as in convulsions depending on kidney disease."

The last quotation we regard as the most dangerous of all, not only because, from the position which the writer occupies, special importance attaches to his words, but because his state-

ments appear to be based upon implied reasons, which probably are no reasons at all, and one of which at least might lead the inexperienced to employ it in order to produce an effect which of all others has to be dreaded in the morbid state in question. "Probably the removal of these products from the body is the reason why pilocarpine cuts short uræmic convulsions,"—such is the foundation for the practice recommended. But surely there is a question antecedent to this most glaring *petitio principii*,—a question which should never fail to be asked in all such kinds of reasoning, and above all things should be pressed home where human life may depend upon the answer. It is this: "Does pilocarpine cut short uræmic convulsions?" Other questions *might* be asked, such as—"Does not pilocarpine sometimes cut off all hope of recovery from uræmic convulsions when recovery might, but for it, have taken place?" Oesterlin wrote a large book on "Medical Logic" (not that medical logic differs in its principles from any other kind of logic). Would it be very presumptuous in us to ask some of our teachers to study it before they publish?

"It not only removes water from the body, but it removes urea." And what if it does? Is urea a poison? Does not everybody deplore that by the name 'uræmia' so innocent a substance as urea should be falsely charged with the foul crime of producing convulsions? Do not authors write it down in their lists of legitimate diuretics side by side with caffeine, potassium acetate, and other innocent drugs?

But while "some of the urea is excreted in the sweat, a considerable amount appears in the saliva." The implication is clear. Salivate your patient. Salivate him even if you fail to sweat him; then, and then only, can you expect to rid him of a "considerable amount" of urea. Would it not strike one as wise to add some such additional information as the following?—"You will probably kill him by the means recommended, and you must carefully consider whether it is wise to run such a terrible risk. His sensations are blunted, or perhaps entirely obliterated, for the time, by the convulsions; and under these

circumstances you introduce under his skin an agent which in the course of a few minutes will cause to pour into his bronchi and lungs a large amount of liquid, of the presence of which, because of his blunted sensations, he will be wholly or partly unconscious, and there will therefore be nine chances to one that he will be as effectually asphyxiated as though in his convulsions he were to fall with his head under water; but there is the one chance that he may wake to intellectual life just in time to recognise his danger and cough the fluid up, under which circumstance you will have the satisfaction of knowing that there will be a good deal of urea in it, and that you have acted scientifically in getting rid of this urea, even though it does very much less harm when not got rid of than most people suppose." If this or some such additional information were given, we believe that the deaths entered under the heading 'uraemia' would be considerably diminished; and that we should soon have the further satisfaction of receiving from the Registrar-General or his Medical Statist a learned and ingenious report that would captivate us by the subtlety of its reasons and the recondite nature of its facts, to account for so extraordinary a change in the incidence of disease.

THE AMERICAN YEAR-BOOK OF MEDICINE AND SURGERY FOR
1898. Edited by GEORGE M. GOULD, M.D. (*London:*
The Rebman Publishing Co., Ltd. Pp. 1077. 38s.)

WE have formerly had occasion to direct attention to this very excellent Year-Book, and the present volume is in no way inferior to its predecessors. The excerpts, which are taken from all the best American and European writings, on almost every branch of medicine, surgery, obstetrics, pathology, physiology, and all of the more special branches of practice, are exceedingly well chosen, and such criticisms as are afforded upon the findings and opinions of various authors are charac-

terised no less by their fairness than by their general usefulness to the reader. The value of the work is enhanced by an excellent index, and by a number of good illustrations. Altogether, we have no hesitation in recommending it to those who may require an exhaustive book of reference to the literature, and to whatsoever is new in the practice of the twelve months ending June 1897.

THE POCKET FORMULARY FOR TREATMENT OF DISEASE IN CHILDREN. By LUDWIG FREYBERGER, M.D. (Vienna), M.R.C.P. (Lond.). (*London: The Rebman Publishing Co., Ltd.* Pp. 208. 6s. 6d. net.)

THIS little book comprises a list of drugs which are used in the treatment of disease in children, very conveniently arranged in alphabetical order, and having marginal references which render it easy to ascertain their properties, uses, therapeutics, and their doses for children of various ages. An enumeration of the drugs which are incompatible with the particular remedial agent which may be under consideration is also valuable. The author has taken much trouble to discover the best means for concealing the tastes of drugs which are unpalatable to children, and he gives the approximate amounts of the correctives which are required to conceal the unpleasantness of the medicine.

There are a number of points which lend themselves to criticism, notably the somewhat lax way in which the author alternates a Latin or an English nomenclature for drugs or diseases—sometimes in the same sentence: for instance, at page 83, when speaking of the therapeutics of hydrargyrum cum creta, he states that it “may, with advantage, be combined with opium, jalapa, rheum, or bicarbonate of sodium”; or, again, we open the book by chance at page 129, and find that “the taste of gr. 3 of acetate of potash is disguised by min. 15 of

syrupus rubi idaei," which latter, being unofficial, would, in any case, have been more intelligible to the average practitioner had the English nomenclature (syrup of raspberries) been adhered to. It is to be regretted that such errors as "acidum arsenicosum" (p. 22) and "sodi carbonas" (pp. 157-8) have crept into a book in which an evident endeavour has been made to employ a correct Latin phraseology; and we feel also that it is a mistake to describe a drug so well known under the name of the liquor arsenicalis by its less known name (except in America) of "liquor potassæ arsenitis"; and, again, the liquid extract of liquorice is mentioned at page 7 as a corrective for the taste of aloes—as the "extractum liquiritiae liquidum"; whereas in the formula which immediately follows, illustrative of its employment, it obtains its official name—"the extractum glycyrrhizæ liquidum." The preparation itself, however, does not appear to be included in the formulary under either title. We note that the word 'adstringent' is invariably employed in place of 'astringent,' which latter by derivation from astringo is etymologically correct. The doses of the drugs advised for children are in most cases correct, but several are quoted too highly, *e.g.*, the infusion of digitalis (3*l.* 4 times a day for a child 1 to 2 years old, and correspondingly large doses for older children); and in at least one case the dose recommended must be regarded as heroic, and likely to lead the practitioner into difficulties. A guide for the practitioner should not, in our opinion, generalise too much; and we feel sure that harm may come of the recommendation to give m. 10 of tincture of opium for a dose to a child of from 8 to 10 years of age, and m. 15 to older children. At page 113 the statement that the variable quantity of strychnine contained in the tincture of *nux vomica* makes it advisable to use the liquor strychninæ instead of it, is hardly correct—the tincture having been standardised, and being very reliable in the amount of alkaloids (not "alcaloids") contained in it; it would have been more consistent at page 3 to have omitted from a prescription—the aqua laurocerasi—the efforts to standardise, which have

been signally unsuccessful. There are other points which we might criticise—such as the formula recommended for chronic “nervous” diarrhoea, with which condition we are not familiar ; but, on the whole, the general plan of the book is good, its information is concise, and the facility with which reference can be made to any given drug, or to the measures applicable to any given disease, by means of a therapeutic index, will render it useful to those requiring a pocket companion.

RHEUMATOID ARTHRITIS: ITS PATHOLOGY, MORBID ANATOMY, AND TREATMENT. By GILBERT A. BANNATYNE, M.D. (Glas.), M.R.C.P. (Ed.). (*Bristol : John Wright & Co. Second Edition. Pp. 182. 7s. 6d.*)

THE speedy appearance of a second edition of this monograph is in itself an indication that Dr Bannatyne's work has proved interesting to the medical profession, and we can confirm our previously recorded opinion that the author gives an excellent account of the disease. His conclusion that “there are at least two separate forms of disease classed under the term rheumatoid arthritis—the one acute, and undoubtedly microbic in character, the other chronic, and probably degenerative,” must, however, remain a controversial point. We would rather lean to the belief that (putting the senile forms of arthritis aside) the chronic polyarticular cases with which we are familiar in the young and in middle-aged women—and in which the classic deformities, with bony thickening and disappearance of the cartilages, are generally present—represent the chronic stages of a disease which may have had an acute or subacute onset. In these cases the frequent history of an antecedent prolonged attack of “rheumatic fever”—undoubtedly the acute beginning of the illness—and the acute exacerbations which occur from time to time during chronic stages, are indicative that, clinically, the two conditions cannot be dis-

sociated. In addition to some literary defects which we pointed out in our review of the first edition, there are other sentences which require revision, owing to their bearing somewhat contradictory impressions: for instance, at page 93 we find it stated that the acute form having usually commenced in one joint, the disease "spreads like wildfire to most of the other joints of the body" (which is scarcely in harmony with our own experience); whilst at page 97 we learn that there is little difficulty in distinguishing it from "rheumatic fever, except in those rare cases of rheumatoid arthritis where several joints become acutely inflamed at once, and that . . . the latter is *slowly progressive*," etc. etc. The book is well worth reading; and we feel, after perusing it, that our knowledge of rheumatoid arthritis has been both consolidated and extended.

TUBERCULOSIS OF THE GENITO-URINARY ORGANS, MALE AND FEMALE. By N. SENN, M.D., Ph.D., LLD., *Professor of Practice of Surgery and Clinical Surgery, Rush Medical College, &c. &c.* (London: The Rebman Publishing Company. 17s.)

WE always owe a debt of gratitude to any one who wades through a great mass of literature, and collects from it everything of value bearing upon a particular subject. Especially do we feel indebted when the compiler presents to us his collection of facts in a systematic and readable form, and more so still if he is able to add to it the results of a ripe experience of his own.

Such is the task Prof. Senn has attempted, and its results are now before us. We congratulate him upon his work, and recommend it to all surgeons and physicians who are specially interested in the diseases of the genito-urinary organs.

The book is well got up, and though it professes to be published in London, is very obviously American. For some

reason or other, the first sixteen pages are left out of the English edition.

Through its pages are dotted numerous Americanisms. We consider this a pity, in the same way as we object to Scotticisms, Hibernianisms, or Cockneyisms.

As well as these, the book contains many more serious faults. We point some out, and hope to see them all corrected in a future edition.

The book is divided up into parts ; these, again, into sections, with definite headings, but often, unfortunately, statements are placed under headings to which they do not belong. For example, on p. 160, under the heading of *Etiology* of Tuberculosis of the Fallopian Tubes, we are told that "Orthmann favors early operative removal of the tubes." Surely this is not a fact of 'etiology.' Many similar examples could be given.

In a scientific work we think that measurements should be given in millimetres, &c. : such statements as "the size of a ten cent piece" or "of a quarter dollar" certainly do not appeal to the English reader.

Much space is wasted in repetition. We would suggest to the author, in future editions, to give once and for all, at the beginning of the book, the structure of a tubercle, and the changes it may undergo ; and in the special parts, to note only any local peculiarities. We also think he might give, in the same way, the general treatment of tubercular patients.

The author does not constantly bear in mind the class of persons he is addressing. At one time he expects the reader to know, without a word of explanation, what Zukerkandl's perineal incision is ; while at another, he thinks it necessary to explain that the testicle is "the essential organ of generation in the male," and that the vas deferens is the "connecting channel between the testicle and the seminal vesicle."

We think also that, except in a history of pathology, the opinions of pathologists of thirty years ago are out of place.

The fact is, the book shows wide reading and great industry in collecting information, but the matter is not well digested

and codified. The diction is often obscure, the punctuation faulty, and there are many mistakes which a good reader should have corrected ; e.g., "uterine tuberculosis of the uterus," p. 126; "bacillus coli commune," p. 159; "2 times" for twice, p. 66, etc.

Many of the author's conclusions we disagree with : for example, we do not think he is justified in saying that castration is at all times "absolutely contra-indicated when the tubercular affection of the testicle is complicated by tuberculosis of any important internal organ." With his methods, too, we are not always in unison. We would urge upon him two things he seems to neglect ; firstly, in all operations on the urethra, whether it be the passage of a bougie or cystoscopic examination of the bladder, to not only wash the meatus, but thoroughly irrigate the urethra ; and secondly, to never neglect, before operations on the kidney, to carefully estimate the urea excretion of the twenty-four hours.

SURGICAL TECHNICS IN HOSPITAL PRACTICE: A HANDBOOK FOR
HOUSE-SURGEONS, ETC. By K. W. MONSARRAT, M.B.,
F.R.C.S. Ed. (*Bristol: John Wright & Co.*)

THIS book is a collection of desultory remarks, styled 'essays,' on various subjects connected with surgery, such as hospital management, nursing, furniture, diet, dressings, antiseptics, and surgical operations, and the author's views of what a surgeon should and should not do.

The purpose of the book is difficult to discover. It is ostensibly intended for the house-surgeon, but much of the advice it gives cannot be of any use to him, as it is on matters absolutely outside his province.

We do not know what the author's experience is, to justify him in giving advice so freely and dogmatically ; but, to judge from many of his statements, it would seem that he has had the misfortune of being associated with very careless surgeons.

He openly asserts that the practice of antiseptic and aseptic surgery is not properly taught in our schools : that, in practice, antiseptics are commonly used in a way so lax, as to be absolutely unjustifiable in the present state of scientific knowledge, and so on. These are, of course, serious reflections on the schools, hospitals, and surgeons he has been connected with, but do not affect others. But even if all this were generally true, surely the author is addressing himself to the wrong persons. It cannot be the duty of even the youngest and most officious house-surgeon to correct it. Certainly his duty is to loyally carry out the treatment ordered by his chief, who alone is responsible.

We disbelieve in books that teach 'ritual.' Dogmas and fixed rituals are only for the ignorant. Our advice is rather—*master your scientific principles, and learn to think.*

It will be remembered, however, that Lord Chesterfield, in his letters to his son, tells him that if he must go to extremes, he would rather he were a fop than a sloven :—"I would rather have a young fellow too much than too little dressed. The excess on that side will wear off, with a little age and reflection ; but if he is negligent at 20, he will be a sloven at 40, and stink at 50 years old." This is good teaching ; and if we apply it to the author's advice to house-surgeons and dressers concerning surgical toilet—both of the surgeon and the wound—we will look leniently on much that might otherwise seem extravagant.

A TEXT-BOOK OF THE PRACTICE OF MEDICINE. By JAMES ANDERS, M.D., Ph.D., LL.D., *Professor of the Practice of Medicine and of Clinical Medicine in the Medico-Chirurgical College, Philadelphia, &c. (London : The Rebman Publishing Co., Ltd. 4to. Pp. 1287.)*

THIS excellent work is a systematic treatise on medicine, written for students by a teacher who combines a knowledge of his subject with the genius for imparting it to others.

It is required of such a text-book that it should be up to date, concise, systematic, and free, for the most part, from controversial matter and from fads ; if, in addition, it is composed in a charming literary style, so as to make its perusal a pleasure, its success will be assured. The present volume appears to us, for the most part, to come up to this high standard, if we except an occasional looseness of statement, which probably arose from haste, and will be corrected in a future edition. The inclusion of Pneumonia among the infectious diseases, however pathologically correct, strikes us as peculiar. The work is beautifully illustrated by coloured plates and diagrams, particular attention being given to the figuring of pathogenic organisms. The work cannot fail to advance the reputation of its author, and will probably be extremely popular with students and young practitioners across the Atlantic.

A CLINICAL TEXT-BOOK OF SURGICAL DIAGNOSIS AND TREATMENT
FOR PRACTITIONERS AND STUDENTS OF SURGERY. By J.
W. MACDONALD, M.D., *Professor of the Practice of
Surgery and of Clinical Surgery in Hamline University,
Minneapolis, &c. (London : The Rebman Publishing Co.
Philadelphia : W. B. Saunders. 1898. Roy. 8vo. Pp.
798. 328 Illustrations. 28s.)*

IN the preface of this volume the author states that his work is confined to the solution of two questions, i.e., what is the disease of injury ? and what is the proper treatment ? The first chapter is devoted to the consideration of how to make a thorough examination of the patient whose disease one is investigating, and no doubt this will prove a useful means of refreshing the minds of the student and practitioner. The arrangement of the order of different subjects is not that usually met with in English text-books ; and while some of the descriptions of diseases are very excellent, others fall a

little short, as one might expect from the amount of ground to be covered. In the chapter dealing with injuries of the osseous system, the ordinary method of treating a fracture of the femur, either by means of the long Liston or by the use of a Thomas knee-splint, is not mentioned. Again, in fig. 69, page 157, the splint generally known in this country as the Thomas hip-splint is described as Taylor's splint, and fig. 67 is erroneously described as Thomas' posterior splint.

The volume reads easily, and the work is generally up to date. Many of the illustrations are the same as those which occur in standard treatises on surgery: the majority, however, are by American authors. Surgical pathology and bacteriology do not enter into this treatise, but a short chapter of ten pages is devoted to the use of the X-rays in surgical diagnosis. It explains their use, the apparatus needed, and is illustrated by four or five typical photographs.

Chapter 16 deals very fully with diseases and injuries of the female generative organs—in fact, some 85 pages are devoted to this subject. Other special subjects, such as the eye, ear, etc., have however been excluded.

The work must have taken a great deal of time and trouble to compile; and I think that Dr Macdonald is to be congratulated upon the result of his efforts. It should take a similar place to that occupied by works dealing with the physical signs and diagnosis of medical diseases.

MASTOID ABSCESESSES AND THEIR TREATMENT. By A. BROCA, M.D., and F. LUBET-BARBON, M.D. Translated and edited by HENRY J. CURTIS, B.S. & M.D. Lond., F.R.C.S. Engl. (*London: H. K. Lewis.* 1897. *Crown 8vo. Pp. 268. 6s.*)

THE object of the authors in publishing this little volume may be given in their own words:—"We think it may be useful if we, in turn, state the practical conclusions to which our own

operations—amounting at the present time to 146, performed upon 129 patients—have led us."

The work is divided into four chapters:—(1) Mastoid abscesses; (2) Mastoid fistulæ; (3) Chronic suppurative inflammation of the middle ear, with latent mastoiditis; (4) Results. The first and second chapters occupy 216 pages of the book, and the second includes a paragraph of 6 pages dealing with intracranial complications. This paragraph is obviously not intended to do more than lead up to the following conclusions:—“(1) The mastoid operation is the same whether there are or are not cerebral complications. (2) Except for special symptoms, having agreed to the clinical diagnosis of a cerebral abscess or of thrombosis, or excepting local conditions noted in the bone at the time of operation, the rule ought to be to confine oneself at first to operating thoroughly on the fistula. If at the end of 24 to 48 hours the symptoms have not yielded, the roof of the aditus should be removed, and the dura mater and brain explored.” The third chapter, including cases, occupies some 10 or 12 pages, and is by no means a complete discussion of the subject, but, like the paragraph referred to in chapter (2), it has a special object, viz., to show that while in *chronic suppuration* of the antrum it is *almost* always necessary to deal with the attic and tympanum as well as the antrum, so in *chronic suppuration* of the attic it is *almost* always necessary to operate on the antrum; but that the exceptions also are worthy of consideration. The main portion of the work (chapters 1 and 2), dealing with the mastoid abscesses and fistulæ, acute and chronic, forms a valuable contribution to our knowledge of the subject. The most interesting conclusions, though not professing to be new, are:—(1) Confirming the observation of Prof. Tillaux, that in nearly all the cases of acute inflammation of the middle ear the canal of the antrum, the antrum, and the mastoid cells are successively attacked; and, again, the assertion of Prof. Duplay, that “it is even probable that in the otorrhœa of acute otitis media the discharge is in greater part from the air cells, and not

from the tympanum"; and lastly, that it is only when the canal of the antrum becomes blocked that acute mastoid symptoms arise. (2) From the result of the operations recorded by the authors, that whereas in mastoiditis complicating *acute otitis media*, excluding cases which die from further complications, the simple operation of laying open the mastoid alone suffices in nearly all cases to bring about complete recovery, in the mastoid complication of *chronic otitis media*, on the other hand, it is practically always necessary to open up the tympanum as well as the mastoid cells and antrum.

In conclusion, we are bound to say that, in our opinion, the best things in the book are Mr Godlee's drawings from Prof. Thane's preparations of the temporal bone.

OUTLINES OF RURAL HYGIENE: FOR PHYSICIANS, STUDENTS, AND SANITARIANS. By HARVEY B. BASHORE, M.D. With an Appendix on THE NORMAL DISTRIBUTION OF CHLORINE, by Prof. HERBERT SMITH. Illustrated with Twenty Engravings. ($5\frac{1}{2} \times 8$ inches. Pages iv-84. Philadelphia: The F. A. Davis Co.)

THE object and contents of this little book are fully described by its title-page. Dr Bashore writes lucidly, his pages are redolent of common-sense, and, though very elementary, the book will well pay perusal by those interested in sanitation, especially in the sanitation of rural districts. A diagram is given illustrating the relation between the level of ground water and the prevalence of enteric fever. We have before insisted that the relation depends upon the local configuration of the first impervious stratum, and upon wells being the local sources of water-supply. A very striking fact was recently demonstrated in a report issued by the Massachusetts Board of Health. The decennial death-rate (1856-65 to 1886-95) from enteric fever in Massachusetts fell from 92.9 to 36.4 *pari*

passu with the percentage of population *not* supplied with public water (which fell from 75·4 to 13·9). In other words, as the risk of a contaminated water-supply diminishes, so does the death-rate from enteric fever fall. We think that the relation between the *source* of water-supply and the level of subsoil-water ought to be more fully considered. As soon as a pure public water-supply is provided, the level of the subsoil-water ceases to affect the death-rate from enteric fever.

ANNUAL AND ANALYTICAL CYCLOPÆDIA OF PRACTICAL MEDICINE. By CHARLES E. DE M. SAJOUS, M.D., and One Hundred Associate Editors. Illustrated with Chromo-Lithographs, Engravings, and Maps. (Vol. I. 1898. *The F. A. Davis Company.*)

THIS remarkable work, which during the ten years of its existence has met with a very cordial reception from the medical press and the profession generally, has this year undergone a remarkable modification, which we think will give the work a new lease of life, and more firmly establish its popularity among general practitioners, for whom the work was and is primarily intended. A few extracts from the preface will explain the alterations which have taken place in the character and scope of the work:—

“Instead of presenting the excerpts from the year's literature arranged in order, under a general head, as before, each disease, including its sub-divisions, ‘Etiology,’ ‘Pathology,’ ‘Treatment,’ etc., is described *in extenso*, and the new portions that the year has brought forth are inserted in their respective places in the text. In this manner the reader is saved all fatiguing study: he has before him what in the older work was left to his memory.”

“The work, when completed, will present all the general diseases described in text-books on practical subjects—medicine, surgery, therapeutics, obstetrics, etc.; and, inserted in

their logical order in the text, all the progressive features of value presented during the last decade. This will remove the cause of dissatisfaction caused by the absence of general subjects in the older work. If the year brings forth nothing new upon any particular disease, the latter will at least appear as it was when *last* studied, whether this be one, two, five, or twenty years before. The general arrangement adopted will make it possible to cover the enterprise in six volumes. As may be seen in any medical dictionary, the subjects treated in the first volume represent exactly one-sixth of the whole."

We have got here the first volume of an excellent dictionary of medicine, surgery, and the allied sciences. Forty-six pages are devoted to abdominal injuries, twenty-two to abortion, and eight to abscesses. Under the head of Absinthe we see reference to "Experiments demonstrating that absinthium has an action upon the whole central nervous system," by Robert Boyce. The editor evidently means our friend Rubert.

There is an excellent article on Acetonuria, and reference is made to Dr Abram's paper on Acetonuria and Anæsthesia. There is a good account of Acromegaly, and among many references, a case by Dr Caton is mentioned, which was much benefited by thyroid gland. The article on Addison's disease is illustrated by a chromo-lithograph from Bramwell's *Clinical Medicine*, and the cases recorded in our *Journal* by Drs Bradshaw and Davidson have received attention. There are well written articles on albuminuria, alcoholism, alopecia, anæmia, etc. All the principal drugs receive their fair share of attention, and in illustration of this we may mention that ten columns are devoted to the preparations of ammonia. No less than fifty-five pages are devoted to animal extracts, among which the thyroid gland, of course, occupies the prominent place. This handsome volume of 601 pages ends with an able article on Bright's disease.

We much congratulate Dr Sajous on the great improvement which he has effected in his hardy Annual, and we trust that he will get sufficient support to enable him to continue his valuable and important work. The printing, paper, and com-

plete get-up of the work reflect the highest credit on the publishers.

AN EPITOME OF THE HISTORY OF MEDICINE. By ROSWELL PARK, A.M., M.D. (*The F. A. Davis Co.* 1897.)

IN the present day of keen competition medical men have frequently neither the leisure nor inclination to study the history of their profession, but this volume is a comparatively short epitome, and coming from the literary pen of such a well known man as Roswell Park, should command the attention which it deservedly merits.

AN AMERICAN TEXT-BOOK OF APPLIED THERAPEUTICS, FOR THE USE OF PRACTITIONERS AND STUDENTS. Edited by J. C. WILSON, M.D., assisted by AUGUSTUS A. ESHNER, M.D. (*London : The Rebman Publishing Co.*)

THIS work comprises two handsome volumes, got up in the best American style. The articles deal with the treatment of diseases and diseased conditions, and are all of high merit. There are forty-two contributors, all well known American medical men, except Professor Laveran and the late Dr Bevan Rake. We can strongly recommend the work.

FORENSIC MEDICINE AND TOXICOLOGY. By J. DIXON MANN, M.D., F.R.C.P. (*Second Edition, Revised and Enlarged. London : Charles Griffin & Co.* 1898.)

THE first edition of this work received a highly commendatory notice in these pages ; and we can speak in even higher terms of the present edition, which we have no doubt will become a standard text-book on forensic medicine.

RELIGIO MEDICI, AND OTHER ESSAYS. By Sir THOMAS BROWNE.
Edited, with an Introduction, by D. LLOYD ROBERTS,
M.D., F.R.C.P. (*London: Smith, Elder & Co.* 1898.)

EVERY member of the medical profession should feel under a debt of gratitude to Dr Lloyd Roberts for bringing this classical work within his reach. This is a well collated edition, and should be in the library of every well educated practitioner.

THE EDINBURGH MEDICAL JOURNAL. Edited by G. A. GIBSON,
M.D. (*New Series.* Vol. II. 1897.)

UNDER the able editorship of Dr Gibson, *The Edinburgh Medical Journal* has acquired new life, and we heartily wish it success. The articles are all of a high character, and the journal now holds a first place among medical monthlies.

RENAL GROWTHS: THEIR PATHOLOGY, DIAGNOSIS, AND TREATMENT. By T. N. KELYNACK, M.D., M.R.C.P. (*Edinburgh: Young J. Pentland.* 1898. *Pp.* 262.)

DR KELYNACK, in presenting us with the first treatise in the English language on renal growths, has supplied a want which must have been felt by all those who have had occasion to look into this subject. He has evidently approached his task in an excellent spirit—the spirit of an earnest student, anxious to leave no source of information unexplored. Not only have museums, libraries, case-books, and private specimens been carefully investigated, but the work bears plenty of internal evidence of personal research; and thus the author has not merely collected the scattered information already published, but adds many valuable records of his own. The labours of others in the same field are treated with generous appreciation and full acknowledgment throughout the book.

Though the diagnosis and treatment are dealt with as well as the pathology of these growths, yet the latter claims chief attention, and rightly so; for as the author says, "clinical progress halts for an advance in pathology." Until that advance is made, and the nature and varieties of renal growths are more thoroughly understood, a discriminating diagnosis and prompt and correct surgical treatment are hardly possible. Clinical evidence as regards the malignancy of renal tumours is most conflicting. On the one hand, we have an amount of evidence showing an almost inevitable tendency towards recurrence; and on the other, histories indicating the long course which some cases run before they become demonstrably malignant. It is to pathology that we must look to guide us in the clinical differentiation of these tumours.

In the book before us, the sarcomata receive the most consideration. They undoubtedly form the most important and interesting group of renal growths. Their size and complex structure, and the early age at which they appear, have always excited the interest of clinicians, and lead to the more careful recording and investigation of these cases than unfortunately has happened with tumours occurring later in life. Hence it is that our knowledge respecting the renal sarcomata of early life is much fuller than is the case as regards the carcinomatous tumours of a later period. The chapters dealing with renal sarcoma show a complete grasp of the subject. The material, clinical and pathological, at the author's disposal, is sufficient to enable him to speak definitely as regards these cases. Carcinoma, on the other hand, is discussed rather in the form of isolated cases, such as malignant adenoma, both renal and adrenal, malignant papilloma, true carcinoma, and epithelioma. The vagueness creeps in through want of material — a want that has been echoed many times before, and to which attention may be drawn again. As Dr Kelynack says, "it must honestly be admitted that no perfect classification seems possible at the present time," and

will not of course be possible until specimens of this class receive a proper pathological investigation.

In addition to the sarcomata and carcinomata, the small but interesting group of benign tumours receive due consideration, and the value of the work is greatly enhanced by an excellent chapter on adrenal growths. Since the discovery of adrenal rests, and tumours of adrenal structure in kidney tissue, it is of course impossible to fully describe renal growths without reference to those occurring in the suprarenal capsules. Dr Kelynack was fortunately in a position, owing to previous investigation, to do thorough justice to this branch.

The illustrations (96) are, most of them, from original photographs, micro-photographs, and drawings. Many of them are excellent. There is a good index, and a remarkably full bibliography, covering thirty pages. The work is indispensable to those interested in this branch of pathology and surgery.

THE MENTAL AFFECTIONS OF CHILDREN: IDIOCY, IMBECILITY, AND INSANITY. By WILLIAM W. IRELAND, M.D. (Edin.). (*London: J. & A. Churchill.*)

A VERY few words will suffice to express the excellent opinion we have been able to form of this book, which is signalised no less by its scientific attributes than by its good literary style. The descriptions of the various diseases are very lucidly given, and they are typified by many clinical cases, and by a number of good illustrations. We note that the experiences of American authorities and of the Danish Holger Mygud are quoted by the author with reference to the heredity of deafness, and concerning its liability to occur among the offspring of deaf-mute parents. Our own observations have not tended to confirm the latter impression, which appears to us to have been greatly exaggerated, more especially by the American writers.

Referring to the statement on page 363 that "it is assuredly a great pity that the different deaf and dumb schools do not

adopt a common system of figurative signs which would be equivalent to a common language," we can only emphasise the fact that the natural signs of the deaf are universal to the extent that a foreign teacher of the deaf coming to this country and being unacquainted with our language can address a deaf-mute audience without any danger of not being understood, and that this universality of the signs was long ago pointed out by a Scotch dominie (Dalgarno), who indicated that the natural signs of the deaf might be used as a universal language by the hearing as well as by the deaf.

Dr Ireland's book is well printed, and a comprehensive index enables the reader at a glance to refer to any point which he may desire to consider.

DISEASES OF WOMEN: A TEXT-BOOK FOR PRACTITIONERS AND STUDENTS. By J. C. WEBSTER, B.A., M.D., F.R.C.P. Edin., *Demonstrator of Gynaecology, McGill University; Assistant Gynaecologist, Victoria Hospital, Montreal, &c. (Edinburgh and London: Young J. Pentland. 241 Illustrations. 14s.)*

THERE is nowadays a plethora of literature devoted to the special diseases of women. Every young aspirant to gynaecological fame must needs become an author, and this he essays to accomplish almost before he has placed his foot on the first rung of the ladder. This superabundance of gynaecological lore has become somewhat confusing, both to the teacher and to the student: to the former, because his modesty weighs with him in making comparisons between the various authors; to the latter, because of his bewilderment in the choice of the best and cheapest guide, in view of his examinational requirements.

The author of the book before us is a worthy representative of the younger school of Edinburgh gynaecologists and ob-

stetricians, and is already distinguished for his valuable researches into the anatomy and pathology of ectopic gestation, of advanced pregnancy and labour, and of the pelvic floor, etc. etc. With such a previous record of original work, it is little wonder to find that Dr Webster's text-book is above the average of similar publications with which we are familiar. As pupil and assistant to Professor Simpson of Edinburgh, the author has enjoyed considerable experience in teaching, and hence he knows how much to say, and to say it in as readable and interesting a way as possible. The chapters devoted to the anatomy of the genital system are of a high degree of excellence, and the illustrations are well chosen and accurate. We notice a few orthographical errors, such as *hilus* instead of *hilum*.

We regret to find that Dr Webster has not included ectopic gestation in his work, and more especially as he is a recognised authority on this important subject. Perhaps he considered it as belonging more to the domain of obstetrics than gynaecology, but clinically and surgically it comes far more within the scope of the gynaecologist than the obstetrician, and we hope that in a future edition he will give this important subject the place which it deserves. We look on Dr Webster's book as a notable and an original one, and highly recommend it as a safe guide to the student, and of equal value to the practitioner who wishes to refresh his memory and to learn more about the subject of which it treats.

GENITO-URINARY DISEASES, SYPHILIS, AND DISEASES OF THE SKIN. By L. BOLTON BANGS, M.D., and W. A. HARDAWAY, A.M., M.D. (*London: The Rebman Publishing Co., Ltd. 1898. 42s.*)

THE two volumes of which this work is composed are made up of contributions by various authors, some of whom are well

known to readers of medical literature on this side of the 'blue streak.' The treatise on diseases of the male urethra, including organic stricture, contains many valuable points of interest. Though we cannot detect anything original in the article on the 'treatment of syphilis,' nevertheless what the author has written on the subject is concise and full of interesting points. He sensibly adopts the cautious attitude of other syphiliographers, in demurring to authoritative statements concerning the rationale of the treatment of syphilis, until we are better acquainted with its pathology. The articles on skin diseases are instructive and well written. The book is illustrated with 300 engravings and 20 full-page coloured plates. We can highly commend the work as a valuable addition to the literature of syphilis and diseases of the genito-urinary tract and of the skin.

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